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ABSTRACT

This collection presents papers from the 1989 Southeast Augmentative Communication Conference. Papers include: "The Augmentative Communication Pre-School Program: Consultation Model" (Barbara Armstrong); "Affect and Its Communication In the Closed Head Injury Population While Using Augmentative Communication Devices" (Banajee, Sands and Schwery); "Strategies for Augmentative Communication Techniques in the Classroom" (Linda Burkhart); "Augmentative Alternatives" (Yolanda Evans and Audrey Lane); "A Whole-Aided Language Approach: Educational Teamwork Which Incorporates Language, Computers, Play, and Early Readiness Skills into a Story Framework" (Pati King-DeBaun and Kelly Lampman); a brief autobiographical sketch by Thomas Kramer (who has severe mental retardation); "Getting the Word Out to Those in the Trenches" (David Krolikowski); "Assistive Technology: Creating a Parent Network" (Andi Lennon and Pam Harden); "Augmentative Communications for the Post-Lingual, Nonverbal Adult" (Melissa Mahone); "Topic Setting: Generic and Specific Strategies" (Caroline Ramsey Musselwhite); "Reducing Learned Dependency in Potential and Early Augmentative Communication Users" (Lynn Sweeney); "Using Communication Technology with the Severely/Profoundly Cognitively Handicapped" (a case study by Gail Van Tatenhove); "Communication Techniques for the Quadriplegic Patients with High Spinal Cord Injury" (Carolyn Wiles Watkins); and "Use of Augmentative Communication Techniques in a Preschool Language Program" (Diane Williams). (PB)

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Southeast Augmentative Communication Conference

(10th)
PROGRAM

Birmingham, Alabama
October 20-21, 1989

FRIDAY, OCTOBER 20, 1989

8:00 **Conference Registration** (Prefunction)
CEU Registration

8:30 **Welcome** (Wynfrey Ballroom)
Pamela S. Elder, M.A.
SACC-X Co-ordinator
Augmentative Communication Service
Birmingham, Alabama

8:35 **Interactive Topic Setting:**
Generic and Specific Strategies (Wynfrey Ballroom)

Caroline Musselwhite, Ed.D.
Irene Wortham Center
Ashville, North Carolina

9:35 **The Consumer Speaks Out:**
A Panel Discussion (Wynfrey Ballroom)

Mike Holsombeck
Birmingham, Alabama

Tom Kramer
Anniston, Alabama

Gordon Richmond
Birmingham, Alabama

10:30 **EXHIBITS and BREAKS** (Prefunction)

11:00-12:30 **Educational Teamwork Which Incorporates Language, Computer, Play, and Early Readiness Skills into a Story Framework** (Wynfrey E)

Pati King-DeBaun, M.S.
Kelly Lampman, B.S.E.D.
Bartow County School System
Cartersville, Georgia

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11:00-12:30 **Reducing Learned Dependency in Potential and Early Augmentative Communication Users** (Wynfrey D)

Lynn A. Sweeney, M.A.
Alternative Communication Technology Center
Central Michigan University
Mt. Pleasant, Michigan

11:00-12:30 **Interfacing the Light Talker or Touch Talker to your IBM PC and Apple II - The Advantages of Keyboard Emulation** (Avon)

Mary Dillman, M.S.
Regional Consultant, Prentke Romich Company
Houston, Texas

12:30-1:30 **LUNCHEON** is served for ticket holding participants in the Wynfrey Ballroom. Please present your ticket at the door.

1:30-2:20 **The Augmentative Communication Pre-School Program: Consultation Model** (Wynfrey E)

Barbara Armstrong, M.S.
Medical University of South Carolina
Charleston, South Carolina

1:30-2:20 **Augmentative Communication for the Post-Lingual, Nonverbal Adult** (Avon)

Melissa M. Mahone, M.S.
Center for Speech and Language Pathology
Huntsville, Alabama

1:30 - 2:20 **P.A.C.T. Parents of Augmentative Communication Talkers: A Parent Network** (Wynfrey D)

Andi Lennon
Regional Consultant, Prentke Romich Company
Atlanta, Georgia

Pam Harnden
The S.M.A.R.T. Exchange
Atlanta, Georgia

2:30-3:20 **Use of Augmentative Communication Techniques in a Preschool Language Program** (Wynfrey E)

Diane Williams, M.A.
Indiana University
Bloomington, Indiana

2:30-3:20 **Using Communication Technology With The Severely - Profoundly Cognitively Handicapped: A Case Study of a Traumatic Brain Injured Child**(Avon)

Gail Van Tatenhove, M.S.
Private Practice, Prentke Romich Company
Orlando, Florida

2:30-3:20 **Affect and It's Communication in the Closed Head Injury Population While Using Augmentative Communication Devices** (Wynfrey D)

Meher Banajee, M.S.
Mark Sands, M.D.
Lynne Schweny, Ph.D.
Children's Hospital
New Orleans, Louisiana

3:30 **EXHIBITS and BREAK** (Prefunction)

4:00-5:00 **Getting The Word Out To Those In the Trenches: A Model for Extensive, In-Service Training in Augmentative/Alternative Communication for Personnel Within the Educational Setting** (Wynfrey E)

David M. Krolikowski, M.A.
Board of Cooperative Educational Services
Second Supervisory District
Suffolk County, New York

4:00-5:00 **Communication Techniques for the Quadriplegic Patients with High Spinal Cord Injury** (Avon)

Carolyn Watkins, Ed.D.
Watkins & Associates
Snellville, Georgia

4:00-5:00 **Augmentative Alternatives** (Wynfrey D)

Yolando T. Evans
Audrey L. Lane
Veterans Administration
Medical Center
Memphis, Tennessee

5:00 **Adjournment**

5:00-6:00 **Exhibitor Hospitality Hour** (Prefunction)

SATURDAY, OCTOBER 21, 1989

8:30-10:00 **Beyond Cause and Effect - Moving from Switch Use to Beginning Communication: Strategies for Young Children, Children with Severe Handicaps and Deaf-Blind Children** (Wynfrey Ballroom)

Linda Burkhart, B.S.
Total Communication/Augmentative Communication Classroom
Prince George's County Schools
Beltsville, Maryland

10:00 **EXHIBITS and BREAK** (Prefunction)

10:30-12:00 **Early Strategies for Introducting Augmentative Techniques in the Classroom:**

What to Do While "Not" Waiting for Prerequisite Skills to Develop

Moving from Voice Output Devices to Picture Systems (instead of the other way around)

Using Computers to Facilitate Communicative Interaction

12:00-1:00 **LUNCHEON (on your own)**

1:00-2:30 **Total/Augmentative Communication (Pre-school Classroom) - The Whole Bag of Tricks: Helpful or Confusing?**

2:30-3:00 **EXHIBITS and BREAK** (Prefunction)

3:00-4:00 **Putting It All Together: Illustrations on Video Tape**

4:00 **Adjournment**
CEU Meeting (Wynfrey Ballroom)

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"The Augmentative Communication Pre-School Program: Consultation Model"

Barbara L. Armstrong, MS, CCC-SLP

Medical University of South Carolina

Charleston, South Carolina

Public Law 99-457 amends the Education of the Handicapped Act (1986) mandating provision of services to at risk or developmentally delayed pre-schoolers and their families. Title I targets infants and toddlers (birth through 2 years) and Title II includes pre-schoolers (ages 3 through 5 years). Speech-language pathologists are expected to join the ranks of professionals providing early identification, prevention, and intervention services through the multidisciplinary/interdisciplinary team model (ASHA, 1989). More often than not infants and toddlers at risk for developmental delays present with diffuse neurological damage involving, not only communication deficits, but also cognitive, motor, psycho-social, and sensory impairments. Case management skills and team work are vital to the success of early intervention programs serving pre-schoolers with augmentative communication needs.

Identification and accommodation of the vast number of children and families yields way to the development of different service delivery models: home-based, center-based, or a combination of home- and center-based. Ancillary service delivery systems are determined based on the pre-schoolers diagnosed needs, severity of the disability, and availability of service providers and funding sources. The burden is placed on the speech-language professional to design programs that meet state and federal guidelines, while serving large numbers of children with broadly based handicapping conditions. One cost effective and time efficient method is via the center-based classroom consultation model.

Augmentative communication programs cater to a heterogeneous population, which increases the challenge to therapist providing classroom consultation. Although each child's capabilities (communicative, cognitive, motoric, non-electronic/electronic, one/two way system), the basics remain stable. Effective communication should not be limited to certain individuals (family members, speech therapist), or environments (home, therapy). Effective communication should permeate the pre-schoolers daily routine encompassing an unlimited number of communication partners (siblings, classmates, foster grandparents, classroom visitors, etc.). In order to achieve such a goal program, participants must realize <u>group responsibility</u>.

The **Communication Evaluation** is intricate to the success of the consultation model. Individual diagnostic assessments coupled with group observation provide valuable baseline data, yielding developmental levels (cognitive, communication), communication competence (strengths, weaknesses, ability to mend communication breakdowns, adult-peer interaction patterns, conversational forms and functions, temporal patterns, etc.), and significance of complicating factors (sensory and/or motor impairments, positioning difficulties). Teacher questionnaires add qualitative and insightful information, while engaging the primary programmer as an active participant.

Goosens (1989) suggests that the development of individual augmentative communication systems as entities within themselves, is a primary obstacle blocking effective programming for augmentative communication pre-schoolers. Communication becomes disjointed and limits social and linguistic expansion. A solution to the dilemma involves turning the classroom into a language/communication rich environment, through the use of integrated communication systems. Rather than each child using his/her individual communication boards, the speech-language pathologist in conjunction with the group members develop an assortment of "topic specific mini-boards". Benefits of using multiple mini-boards have been documented: easily developed; cost efficient; promote rapid communication; facilitate effective communication interchange with unfamiliar partners; permit semantic and linguistic expansion; and encourage interactive modeling by the interventionist or classmate.

An **Environmental Inventory** evaluates the classroom structure and its contents as they relate to children. Pre-schoolers are small active people, who learn best through a "hands on" approach. Access to the environment, equipment, play materials and communication systems facilitates the learning process.

1. Complete a systematic inventory of the classroom equipment (i.e. work tables and chairs, play stations, rest room facilities, computer and accessories, toy shelves, lighting, etc.) noting size, accessibility and possible adaptations.

2. Review and inventory the classroom materials and language rich toys noting availability, accessibility, communication potential, and needed adaptations.

3. Observe classroom activities with particular attention to: frequency of communication interchange, child's role as communicator, availability and versatility of augmentative communication system, in-service training/interventionist modeling opportunities. Identify classroom communication

strengths, areas needing improvement, and note obstacles impeding successful communication interaction.

During Design and Construction of the "multiple mini-boards keep in mind the tenet, that pre-schoolers are motivated to communicate with each other and adults. The speech-language professional is responsible for developing flexible systems to accommodate children with different accessing abilities (direct selection, scanning, encoding), representational skills levels (actual objects, photographs, miniatures, symbolic line drawings), and semantic/syntactic needs (labeling, requesting, informing, investigating, negating, rejecting, socializing, teasing, etc.). Techniques involving scripting and/or vocabulary selection and prioritization work effectively in developing multiple mini-boards involving classroom routines (circle, snack, computer time), special events (trips, parties, visitors), imaginative play activities (pretend beach, picnic, dress up), story time or while playing with language rich toys (pop-up pets, legoz, electronic penguins).

Portability and accessibility issues warrant construction of versatile systems including communication vests, three ring binders, felt boards, wall boards and placemats, that can be customized as needed. The group responsibility is to work toward expanding the library of mini-boards and create the impetus to use these systems throughout the day. This is achieved, when boards, objects, equipment, etc. are organized and located within the necessary environment or play station. For example, all mini-boards, software programs, computer equipment and peripherals should be located at the computer station and within reach by the interventionist and the pre-schoolers. Shelving units, milk crates, shoe boxes, peg boards and hooks, velcro, zip lock bags, manilla envelopes, slide protector sheets, egg cartons, etc. can organize and display needed materials and facilitate the organizational, topic-based concept. Building the library of mini-boards and corresponding objects takes time and requires staff support.

Funding and distribution of labor intensive tasks can be the most difficult of the professional responsibilities. As the concept of serving the augmentative communication pre-school program is relatively new, and use of the consultation model less definitive to administrators, it becomes a challenge, to prove program success and obtain financial backing. How can this be done if no other program exists in the area? With new technology we opt to show a videotape of a successful pre-school program, but there are none on the market, and few if any in your area to visit. Operating on a shoe string budget, following completion of the communication evaluation, and environmental inventory, it is time to select several key activities and develop the augmentative communication systems. Next, introduce the "activity" and corresponding

communication systems" to the teacher and class. Familiarize all involved with the interactive process. Videotape the successful venture and schedule a formal presentation including families, administrators, community service groups. Present a formal proposal with written justification, itemized materials, estimated costs and the need for volunteers in order to expand this program.

Distribution of labor intensive work frees up professional time for actual intervention and in-service responsibilities, and expands the number of individual program supporters with personal investment in the project.

In-Service Training Activities are another component of Public Law 99-457 facing the speech-language professional. Teaching effective use of and response to augmentative communication systems involves ongoing demonstration in natural settings including teachers, classmates (handled in classroom consultation model) and family members (handled privately, in group workshops, via videotape, and during open house activities). In-service training can be a time consuming issue with funding drawbacks, therefore, it is helpful to elicit the support of the team serving the pre-schoolers and divvy up responsibilities: rotate volunteers to run training activities, solicit donations to cover cost of materials and system construction, dub videotapes and stock a resource library, call upon community service groups for assistance. The goal of in-service training programs involves educating the augmentative communication preschooler and potential communication partners in achieving successful community interchange.

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AFFECT AND IT'S COMMUNICATION IN THE CLOSED HEAD INJURY POPULATION WHILE USING AUGMENTATIVE COMMUNICATION DEVICES

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INTRODUCTION

For the normal adolescent who has spoken without difficulty since childhood, the prospect of being unable to communicate through the use of natural speech is unimaginable. When confronted with a closed head injury, some of these individuals retain an intense desire to communicate and therefore need new ways of expressing themselves. Present communication systems though effective for interaction purposes fall short for the purposes of expressing affect. Review of affect expressed by two adolescent patients revealed the use of various other non-verbal strategies by the patient while expressing emotions. A need was therefore felt for a more in depth investigation for the use of these methods and the need for a more sensitive approach while aiding the patient in programming their devices.

REVIEW OF LITERATURE

Affective communication is dependent on the use of linguistic and nonlinguistic structures as well as on the use of one's cognitive abilities. The communication of affect requires the recognition of a feeling, identification and labeling of the feeling, and then the communication of the feeling accurately to another individual. In the non brain-injured and communicatively unimpaired individual, the process is virtually instaneous while for the brain-injured individual, the process is slowed. The intrusion of a communicative device into the process further slows it down. For the communication of "general purpose" emotions (n.b. happiness, sadness) the slowing of the process may be minimal but for the more complex conveyence of feelings related to interpersonal relations (n.b. gratitude, guilt, or pride) the process maybe seriously hindered. The loss of this communication may result in the loss of the expression of subtle nuances of feeling. Bretherton, et. al. (1985) suggest that the ability to talk permits a more complex level of intersubjectivity of communication than nonverbal communication alone. Studies further suggest that there is an increased incidence of behavioral and emotional disorders in individuals with linguistic

impairments (Baker, et. al. 1987; Beitchman, et. al. 1989). This may be significant in the head injured population which has been characterized as having an increased incidence of linguistic, social, emotional and behavioral difficulties.

It is estimated that there are approximately 440,000 serious head injuries each year in the United States. 30,000 to 50,000 of these persons land up with physical and intellectual impairments so severe that they are unable to resume a normal life (Anderson and McLaurin, 1980; Kalsbeek, McLaurin, Harris and Miller, 1980). DeRuyter, et al. (1988) addressed the issue of the relationship of cognitive functioning and the use of augmentative communication devices. Adaptation to communicative devices is related to physical status, cognitive recovery level, and emotional status of the patient. Cognitive recovery is assessed utilizing the Rancho Los Amigos Scale of Cognitive Functioning, (Hagen et. al., 1979) which varies with respect to the patient's orientation to the enviornment, social appropriateness of behavior, emotional stability and intellectual functioning along an eight point scale. It is important to note that despite recovery to higher levels of functioning on the scale, the patient may continue to function at lower levels for himself in terms of recovery of societal functionality. According to DeRuyter, et. al. (1988), closed head injury patients have to be at least at level III and IV to be able to use some form of augmentative communication systems. At levels VII and VIII, patients need adequate vocabulary so as to be able to use their communication systems for social interaction and to share information.

In 1981, Buekelman, Yorkston, Mitsuda, and Kenyon briefly described four brain-injured individuals who were able to use Canon Communicators. In 1987, DeRuyter amd Lafontaine reported on 63 nonspeaking closed head injury patients. 48 of these individuals used "simple" augmentative/alternate communication systems. 77.1% of these were communication boards (54% word boards, 35% picture boards, and 10.8% alphabet boards). Twelve dedicated systems were recommended which included nine Sharp Memowriters, two Canon Communicators, and one Zygo 100 scanning communicator. In 1988, Light, Beesley and Collier reported the progress of a young brain-injured adolescent through 3 years of progressive communication intervention. She progressed from a communication book, " yes-no" gestures, eye-pointing, Voicemate, microcomputer with the Adaptive Firmware Card, to the Speech-Pac.

CASE HISTORY

Patient No. 1, was a 16yr old female who incurred a closed head injury in a motor vehicle accident in January 1988. She was in a coma until June 1988, when she was admitted to Children's Hospital, New Orleans for rehabilitation. On initial examination, it was apparant that she was dysarthric and ataxic and needed an augmentative or alternative communication system to express her basic needs and wants. An alphabet word was constructed as an

interim system of communication until a more elaborate board was developed. A word board was next developed. She used the board extensively but became frustrated while conveying long messages. A written feedback was needed by her communication partners. The Canon Communicator was therefore recommended. The Touch Talker was also tried but was refused for various reasons; the voice was robotic and unappealing, the patient was unable to sequence Minspeak symbols and was unable to remember the location of the symbols on the device. The Canon Communicator was used extensively by the patient during all daily activities and therapuetic sessions. The patient was successful in utilizing the device in day to day interactions. However, she was frustrated by difficulties in affective communication. At one point, her frustration was manifested in suicidal ideation requiring psychiatric intervention.

Patient No. 2 is a 11 year old boy who incurred a closed head/spinal cord injury when he was thrown 105 feet in the air by a van while crossing an intersection on his bicycle. He was paralysed neck downwards and needed a augmentative system to communicate his needs and wants. Initially a manual alphabet board utilizing an eye blink "yes/no" system was used to express his needs and wants. The Light Talker activated by a Piezo electric switch mounted above the eyebrow was used in the 128 row column scanning mode to express his needs and wants. Programming of the device was initially done by the therapist using input from the patient and his parents. Later most of the programming was completed by the patient himself.

DISCUSSION

The two cases described highlight a number of the difficulties of the head injured individual utilizing augmentative/alternative communication devices essential for the communication of their affective experiences. Devices utilized were distinctly different because of their individual needs. Case 1, utilized a direct selection mode that paralleled the natural thought process, avoided the use of robotic speech and allowed the use of nonlinguistic structures to enhance communication. The system had significant drawbacks because of the length of time needed to communicate, its one dimensional character, and the necessity of the communication partner to monitor the device's output and the communicator's nonlinguistic communications. This process led to much frustration for the patient secondary to the loss to richness of affective expression, inability to communicate nuances of feeling effectively and the mismatch between her ability to feel and think with her ability to communicate.

Case 2 adapted to the Light Talker as it addressed his need to communicate rapidly and because it has a speech output. In addition he was able to reproduce meaningful phrases to express affect by preprogramming them into the device. Also the characteristics of the device allowed the communication of affect through changes in prosodic features of the speech output by appropriate preprogramming of the device. Inspite of its

usefulness for him, the device was frustrating due to the differences in speed of communication and its affect constricting qualities.

DeRuyter, et. al. suggests that patients reject augmentative communication devices secondary to denial and lack of insight into communicative difficulties. It may be postulated that devices are rejected secondary to their affective limitations. One limitation is their affective constricting quality that renders them useful in the communication of "general purpose" affects but inadequate for the communication of highly specific personalized affective states. This constriction of affective expression is not only frustrating but limits the potential of the user to develop affectively attuned relationships. Secondarily, the devices cannot function as rapidly as the normal communicative process and require a finite number of steps to function. The individual feels faster than he thinks and still has a delay for communications to be produced. Interactions become slow, laborious, potentially ungratifying and artificial. The artificialness of interaction may be the most inhibiting of the characteristic of the device.

Despite the successful recovery of the patient on the Rancho Los Amigos Scale of Cognitive Functioning, the patient is aware of his injury, loss of communicative abilities and loss of sense of self. The patient may have difficulty communicating his sense of change secondary to congnitive limitations and difficulty in expressing his inner experience of himself effectively. This relates in particular to individuals at level VII or VIII. Their apparent successful recovery is contradicted by the changes they experience in their social interactions, ability to communicate subtleties of meaning and affect and in their attunement with their friends and families. As case 1 illustrates, it is important to recognize the patients' experience of themselves. Without acknowledgement and validation of these feelings; hopelessness and isolation may intervene leading to suicidal thoughts and acts.

To counteract, the linitations of the devices and the inability of the recovering individuals to feel adequate in themselves, an emphasis on the develpment of affective attunement in relationships is necessary. Affective attunement implies a match between inner feeling state, communicated affect and the recieved communication. The process of affective attunement needs to be relearned by the patient and their family. The therapist can facilitate the relearning process by:

a) Monitoring patient's nonlinguistic communication including nonverbal cues, grammatical errors, spelling mistakes and speed with the device.
b) Feedback to patient regarding communication recieved and its affect through reading back communication with vocal inflection, direct questioning or via elaboration of the interaction.
c) Working with the patient to develop words and phrases for

the meaningful communication of affect.
d) Development of directed listening skills in families (and therapists) for nonlinguistic elements of affect laden statements and for detecting areas of affective nonattunement.
e) Validation for the recovering individuals of their feelings of frustration and differences in relationships in a nonjudgemental empathic mutual manner.
f) Development of open affective exchanges that allow both patient and family to feel understood by each other.

The process of developing of affective attunement is ongoing for patient and family in their natural setting. Monitoring of the process may be required at intervals to address areas of difficulty. The acceptance and use of augmentative communication devices is facilitated as affective attunement develops because the device is utilized for not only communicating for general purpose feeling and information but also for one's most private and significant feelings.

SUMMARY

The adjustment to the inability to verbally communicate is a major task for the closed head injured adolescent. Augmentative/alternative communication devices ease the adolescent's adjustment and facilitates his rehabilitation into society. A limitation exists for the adolescent in the ability to communicate affect utilizing augmentative communication devices. This deficiency can be addressed by a guided, relearning process for the patient and their family in developing affect attunement.

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Beyond Cause and Effect:
Moving from Switch Use to Beginning Communication:
Strategies for Young Children, Children with Severe Handicaps and Deaf/Blind Children

Linda J. Burkhart

The use of switches to teach cause and effect is well established as an effective strategy for teaching children with severe handicaps. What is less well known is how to make use of this cause and effect learning to teach additional functional skills. The switches allow children to take an active part in their learning and to perceive themselves as doers. The toys, music or other reinforcers that the children control provide the motivation for children to put forth more effort in a learning task. With the addition of functionally relevant goals, the child learns skills that help him become a more independent person with unique self-worth. His involvement in the learning process allows him to practice a relevant skill with appropriate feedback, instead of just performing a series of repetitions in an isolated task. Some goals that could be considered as functionally relevant from a young child's perspective include: pleasure, cognitive exploration at the right level of difficulty, movement and going where you want to go, doing what others are doing, doing something without help, helping someone else, playing, interacting with others, expressing needs, wants, opinions and feelings, and asking questions.

Switches and toys can be used in every aspect of the child's educational program when their role is seen as the motivation or means to achieve a functional goal.

In the area of cognition, cause and effect learning is the first step. The difficulty in teaching this skill is usually not that the child is functioning too low to understand cause and effect but that it is difficult to set up a situation in which the child can experience and learn cause and effect. The challenge is for the instructors and therapists to contrive a situation in which this learning can occur. For specific strategies in teaching cause and effect refer to my third book: Using Computers and speech Synthesis to Faciltate Communicative Interaction with Young and/or Severely Handicapped Children - pages 10-13. Other cognitive skills that may be taught using switches include: visual and auditory attending, shifting attention, visual tracking, object permanence, means ends, expanding motor shcemes, imitation, container concepts, trial and error, discrimination and memory. Strategies for teaching these

skills may be found in my second book: More Homemade Battery Devices for Severely Handicapped Children with Suggested Activities.

Switches and toys may be used to motivate children in developing motor skills. Sample gross motor skills include: tolerating positioning, head control, rolling, reaching, moving through the environment, maintaining relaxed positions, and isolating motor movements. Sample fine motor skills include refining reach and grasp, pointing, and beginning writing. Refer to my second book for specific strategies. Switches can be set up for children to practice motor skills independently or they can be used during facilitation techniques to encourage active participation and goal-directed movements.

Social and self-help skills can also be taught with the aid of switches. Attending and beginning interaction can be encouraged when children are worked with in small groups or pairs. Toilet training becomes reinforcing when toys or music turn on when the child urinates in the correct place.

Language development begins with simple non-verbal communicative interaction and a shared referent. The switches and toys provide the shared referent and the instructor plays with the child using the switch in a simple turn taking game. Simple commands can be paired with switch actions to teach receptive understanding.

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Early Strategies for Introducing Augmentative Techniques in the Classroom

Linda J. Burkhart

The power of communication comes alive for a child when he can actually use a switch to relate a verbal message. With technology becoming cheaper and more available, more children can benefit from voice-output. In the past, it was felt that many prerequisite skills had to be mastered before voice-output devices could be utilized. This assumption eliminated many children who were very young, cognitively limited or severely handicapped. With simple technology today, we can begin immediately teaching communicative interaction at whatever level the child is functioning. Instead of waiting for the child to develop the language and cognitive skills necessary to utilize a sophisticated communication device, children can use simple voice-output devices to develop those skills. With simple technology today, we can begin immediately teaching communicative interaction at whatever level the child is functioning.

We would like technology to be a "magic" machine that could somehow compensate for all of a child's disabilities and allow him to communicate all his thoughts, desires, and feelings. However, as teachers and therapists, we know that even for a child who has good receptive language, giving him a device that allows expression doesn't automatically provide him with all the skills needed for him to produce effective communication. This is even more pronounced with very young children and children with multiple disabilities who may have not yet developed a good basis of receptive language or a functional understanding of how language works.

Any form of communication develops over time with new skills building on the old ones. Techniques, matererials, technology and content are tools that constantly change and adapt to the skill level of the individual. Teaching augmentative communication then, becomes a process that uses technology or special techniques as facilitators and motivators to help the child move through this process. It is not a single device or technique but rather a continuum

that may lead to full speech production, partial speech with augmentation, or almost total reliance on alternative systems.

In the classroom, instruction continues even when language systems have not yet evolved to the point of functional use. By giving the child an active means to participate by communicating even one simple message or thought functionally related to what is happening in the classroom, many component skills can be developed.

The act of relaying a single thought or message can be a significant first step for some children. If this act is verbal, such as a tape recording on a loop tape or computerized speech, it will be even more powerful for the child. Voice-output allows the child to produce communication that is closer to what he is already experiencing receptively. It is also cognitively easier for children to understand what is being expressed. This is because the child doesn't have to interpret the concept from a different "language system." Verbal output also allows him to call out, interupt and be assertive in a way that is difficult for other people to ignore.

Sample messages might include: "come over here", "turn the page", "I wanna get down", "I wanna cracker", "more", "tickle me", "give me a push", "I'm looking for Mary, have you seen her?", "fix the TV, please", "guess what I ate for lunch", "hey, watch me", or "I have a surprize, look in my bag!"

Numerous communication skills can be learned through the process of using voice-output and one message at a time. The child can learn to use it to call attention and initiate conversation. He can learn that conversation involves turn taking, and that it must be directed to another person to be effective. Repair strategies by use of multiple systems including gestures, facial expression and yes/no responses can be facilitated. Functional switch use can also be developed because the switch is used in a functional situation that has meaning to the child. The child learns to activate and release the switch to effectively communicate the message. Picture identification is taught and reinforced when a picture or symbol is used to represent the message. Note: accurate switch use and picture identification are not prerequisite

skills but rather they are taught as part of the functional process and become possible outcomes.

The next step might involve making choices between two thoughts or ideas. Pictures or symbols are selected to represent the two messages and tape recorders or some type of computerized speech is used to "speak" the messages. Once again, picture identification, communicative intent, and accurate switch use are not prerequisites. These skills are taught through the voice-output and the pragmatic interaction between the student and the instructor. Examples of two choices might include: build it up/knock it down, come over here/go away, I want a cracker/I want juice, give me a tickle/eat macaroni, put it on/take it off.

For children who learn to make a choice between two alternatives the next step might be to move on to a choice of three or more items. The more items, the greater the need to move from "low tech" tape players to more sophisticated technology such as a computer or a portable voice-output device. For ideas on using computers, refer to my third book.

One effective technique when working in the classroom or with a group of children is "talking switches." Three to six switches are set up to talk using a joystick replacer box, a loquider, or an A.I.P.S. Wolf. Refer to my third book and the resource list below. Inexpensive remote pedal switches from Radio Shack may be used (with springs removed and replaced with a bit of foam rubber) or any available switches that are within the capabilities of the individual children. Because the switches are separate, they may be placed at different positions, spread apart, or rearranged as needed for individual children in the group. Hook Velcro on the bottom of the switches and a board covered with indoor/outdoor carpet will allow quick and easy adjustment. Children with more severe motor involvement can use a modified flashlight on a headband to "point" to light activated switches connected to the voice output device.

Children can use three to six "talking switches" to develop even more component skills. These skills will be facilitated by the choice of vocabulary used in a particular activity and by the skill of the instructor to

"set the stage" and direct the lesson. The motivation for the child will be found in the playfulness of the activity and its functional relevance to the child. Some sample skills include: requesting, acepting and rejecting, directing action, combining words and phrases, sequencing, and playing.

Moving on to greater numbers of selections involves using a portable voice-output device, or if one is not available, a computer with a keyguard and overlays. Refer to my third book for specific directions. Some children will need to develop skills for scanning at this point. Techniques for teaching scanning will be discussed later. Once again, the speech from the device facilitates the use of pictures and symbols in a concrete functional situation. The overlays used on the device then become the child's back up system to use when the voice output is not available. Since the child is already familiar with the selection technique, the arrangement of vocabulary, and the manner in which it may be used in a functional activity, he is more likely to be able to use it as a manual system.

If this philosophy is followed, the instructor begins to use voice-output as soon as it can be made available to a child and uses it as the motivation and the cognitive connection to teach language development. The instructor plans for this process and when evaluating the child for range and resolution, she attempts to coordinate these needs into the parameters of specific devices she may have available or be able to acquire. The best scenario would be to have a system where devices could be available on long term loans to the child. Through teaching language in this way, the child's skills will change and grow. Different devices may be more appropriate at various stages of this process. It is important that the flexibility to change or modify devices be incorporated into a child's program as the child's needs and abilities change.

When it is physically impossible for a child to directly select more than a few items, scanning becomes a possible tool in expanding communication. Scanning is a difficult skill that requires prolonged attention, concentration and good perceptual skills. Component skills of scanning may be taught using simple battery toys and switches. Any toy that will move slowly in a given direction may be used to teach the concept of activaing a switch and visually following something to an end point.

An example might be a battery car that runs into a tower of blocks and knocks them down, a battery powered dog that walks off the end of the table, or the fireman who climbs up a ladder to reach a prize at the top. Simple clock scanners can be constructed from any battery toy that revolves slowly or moves back and forth continuously such as "fishing game", "Mr. Mouth", or "the fireman." Objects and pictures can be mounted so they actually move around, disappearing under a screen and reappearing on the other side. In this example, the child only gets the desired item if it is visible when the switch is released. More items can be used if some type of a pointer is attached to the part that rotates, and the objects or pictures are placed around it to be pointed to.

Speech synthesis on a computer can be introduced with beginning scanning. Using a program that draws a series of lighted boxes on the screen, pictures or items can be taped or mounted to clear plastic in front of the screen. The child can use one or two switches to move the lighted box behind a desired item and then make the computer speak its name or message. The number of boxes can be increased as the child's skills increase. Programs and directions for this activity can be found in my third book.

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Total/Augmentative Communication in the Preschool Classroom - Helpful or Confusing

Linda J. Burkhart

The decision to use aided or non-aided approaches for augmentative communication is not always clear cut with many children. For some children, pros and cons exist on both sides. In a preschool classroom, a child who is non-verbal or pre-verbal may benifit most from a combination of approaches.

The children who I am refering to may have a variety of abilities and disabilities. Some of these multiple factors might include: a wide range of motor control and motor planning skills, receptive as well as expressive language delays, suspected visual and auditory perceptual problems, emotional and behavioral disorders, and difficult to test cognitive levels. A few of these children show a clear "communicative dissonance" between receptive and expressive language testing. Others, due to receptive disabilities or inappropriate test measures, don't show a measurable difference between reception and expression. If this is the case, teachers, therapists and parents may be able to identify other areas of development that have surpassed language such as fine motor, perception, adaptive skills, social awareness, humor, toy preferences, and T.V. show interest level. This may indicate that the child's potential for understanding surpasses his ability to use language. Many of these children may benifit from a total/augmentative communication approach.

Total/augmentative communication refers to using every available means to communicate. It includes speech, word approximations, sign language, pictures and symbols, voice output devices, gestures, facial expressions and anticipatory pauses. This involves receptive language training as well as expressive. It implies that the instructor and supportive personnel in the classroom will need to be using all these methods as they teach and interact with the students.

Sign Language:

Sign language is the system that is the most portable, spontaneous, and most closely related to verbal language. It is a system that very young children can often learn. In my experience, the visual nature of sign often helps children focus and pay attention to what the teacher is

saying. Verbal pace is often slower and greater emphasis is placed on key words through exaggerated signs and facial expressions. Sign language provides a framework upon which the other systems can be built. The instructor begins by signing everything that she says, or at least the key words in the sentence.

Although there are many types of sign language, it is helpful for a school or school system to select one as the main reference for general use. Sometimes individual signs need to be modified or adapted from other systems. However, this should be kept to a minimum to avoid confusion. A good resource is The Comprehensive Signed English Dictionary published by Gallaudet Press in Washington, D.C. Signed English follows English word order and is less difficult to learn than more exact systems.

Although the idea is to imerse the children in the visual language of sign, emphasizing selected words is also helpful. Core vocabulary to emphasize with sign language might include: words that need to be expressed in a hurry; names of people, places, and activities in the classroom; common actions, descriptors and question words that are difficult to picture; expressions, social phrases, and directions. Some examples would be: (names of children and teachers in the class), Hi, uh oh, mine, wait, stop, go, terrific, my turn, all done, more, here, not here, not now, later, when, where, who, why, what, mommy, daddy, school, home, play, sick, snack(eat), wash hands, bathroom, want, don't, me, please, thank you, help and bye.

Picture and Symbol Systems:

Since sign language is limited by children's motor coordination and by the knowledge of the listener, picture systems can be used to expand upon sign and allow children to communicate in more environments. Picture and symbol systems can be standardized to some extent according to the general functioning level of the children in the class. Clear black and white line drawings are often versatile for many children. They are also easy to duplicate and to change the size on a copy machine. Some individuals will need modifications such as enlargement, color, or pairing with photographs but a general set will be useful for setting up the classroom and faciltating interaction between children. The speech therapist can help with the selection and standardization of these pictures. A group

of volunteers can help teachers make overlays and classroom materials from this set of masters. A good idea is to store the masters in various sizes near the school copy machine. For pictures of some verbs and difficult concepts to draw, consider using a sketch of the sign.

Picture or symbol vocabulary can be selected according to activity environments throughout the school day so that a number of communicative functions may be facilitated with a limited vocabulary base. Home environments can be worked out with parent involvement. This vocabulary can then be arranged on overlays depending on what type of voice-output devices might be available in the classroom. Overlays the size of the Unicorn Board or the Power Pad, using two inch size pictures, are large enough to double as small group manual systems. They can be mounted on the wall or easel or worn like a communication vest (Goossens' and Crain).

Pictures and symbols can be used with and without voice-output. Frequently voice output helps children learn how to use pictures for functional communication. The instructor can model their use in combination with the sign language as she teaches. This can be done several different ways. The teacher might first sign what she says and then repeat or elaborate for emphasis using the pictures and/or voice-output. Another technique is to mainly focus on using the pictures and/or voice-output for specific activities and use the sign language as a back-up or way to elaborate when the picture vocabulary is not extensive enough. Certain activities will lend themselves more readily to one system or another depending on vocabulay needed, location, amount of physical movement and communication partners available. Whereas it would be ideal to have pictures for every activity, in practiacal application this rarely occurs. Having the flexibility to use sign and other systems teaches children communication stratigies in a functional way.

Voice-Output:

Long-range outcome is often not predictable for preschool children. As a result, personal voice-output devices may not be prescribed or made available to them. The preschool child, however is very motivated by voice-output and may benefit greatly if it can be integrated into the total/augmentative approach.

A relatively inexpensive class voice-output device is a language master. Photographs, pictures and symbols can be mounted on language master cards. Cards may be cut in half to make them a more manageable size. Hook velcro on the back of the cards allows them to be mounted around the room on the wall where specific vocabulary might be needed. (Note: use light weight, industrial grade indoor/outdoor carpet on the wall as a mounting surface.) The instructor as well as the students can go to the wall or display stand and select cards as needed. Placing them in the language master makes them talk. For more severely involved children, cards may be selected by eyegaze or a light pointer and then put into the language master by the instructor or assistant.

The Wolf is another inexpensive, durable voice-output device that works very well in the classroom. The overlays can be placed into notebooks for individual children. It is sturdy enough to take a few bumps and falls and can be placed right in the center of a group of preschool children engaged in active play. The A.I.P.S. Wolf can be adapted to operate "talking switches." The "Say It Simply Plus" is a portable Power Pad device that works well for a group of children as a community language board. It can be positioned on an easal or the instructors lap. The Introtalker provides a different aspect because of the digitized speech. It is useful for nursery rhymes, musical and singing activities, or games that are more effective with many expressions in the voice. The Introtalker can be programmed quickly for special activities and Birthday parties and Holiday celebrations. Its use as a personal device with frequently changed multiple overlays is limited due to the high quality speech which limits the amount of memory available. Whatever device or computer is available, overlays can be designed to make them an integral part of the language curriculum. When children can "own" or "borrow-long-term" a personal device that is functionally useable to them, skills grow rapidly.

Speech:

Though speech goes without saying, it is important to mention. Speech is the most functional system and should always be encouraged. It is also the most efficient and accepted system and will be chosen as prefered by the child if at all possible. It is important to remember that oral motor and speech therapy are also integral components of

the total/augmentative program. Vocabulary for specific activities can be chosen phonetically to encourage production of selected sounds. Physical therapists often report that movement faciltates vocalizations from children. Sign language provides a movement for each word and often has the same effect. The decrease in pace when using augmentative systems provides more time for speech sounds to be formulated. The consistent speech produced by a computer gives the child reliable and predictable feedback. This appears to be true even when the child becomes quieter when using voice-output. In my observations, the sounds that were heard are practiced later during less structured activities. A final point is that when context is established through multiple systems, the instructor is more likely to understand what the child is attempting to say. This allows the instructor to correct the child and encourage more accurate articulation.

In sumary, total/augmentative communication will never come close to replacing speech. It does, however, provide children with numerous immediately functioional tools to facilitate language development. Rather than being confusing to children, my experience has been that it multiplies the amount of communication a child produces from any one system. It also teaches the child flexibility of communication strategies when he can't get his point across the first time. The child who recognizes his own need for augmentation can self-select systems that work well for him from an environment that exposes him to a wide variety. As the child's skills stabalize, recommendations for a child's own personal system can be made more accurately. Children who do not develop functional speech begin to learn strategies that they will need throughout their lives. Children who are developing speech, but at a slow rate will use total/augmentative communication to lay down a firm language foundation that will lessen communication dissonance and diminish cognitive delays.

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Selected Resources

ADAMLAB
Wayne County Intermediate School District
Data Processing Center
33500 Van Born Road
Wayne, Michigan 48184 (313) 467-1415
Attn: Greg Turner
- They sell the Wolf (inexpensive, portable communication device with speech synthesis). They also have a Scan Wolf and the A.I.P.S. Wolf that will make inividual switches talk.

Adaptive Communication Systems, Inc.
Box 12440 Pittsburgh, PA 15231 (412) 264-2288
- They sell: SpeechPAC, ScanPAC. EvalPAC, Alltalk, switches, light pointer, environmental control, ToyPAC, and other communication products.

The Capper Foundation
Speech Pathology Dept.
3500 West 10th Street
Topeka, Kansas 66604
- They sell a xerox set of their communication pictures. Pictures are clear line drawings.

Crestwood Company
P.O. Box 04606
Milwaukee, Wisconsin 53204-0606 (414) 461-9876
- They sell the Tape-A-Message loop tape recorder, talking pictures symbol systems, and a variety of parts for constructing manual communication systems.

Don Johnston - Developmental Equipment, Inc
P.O. Box 639
1000 N. Rand Rd. 115
Wauconda, IL 60084 (312) 526-2682
- They sell: Power Pad, TOUCHCOM (software for the power pad to speak as a communication board), Adaptive Firmware Card, Unicorn Expanded Keyboard, keyguard and moisture guards for Apple, ECHO+, switches, mounting hardware, Picture Communication Symbols, Foto Series (photographs of foods, objects, actions), Core Picture Vocabulary, Oakland Schools Picture Dictionary and a variety of other communication and computer products.

Dunamis, Inc.
2856 Buford Highway
Duluth, GA 30136 (404) 476-4934
- They sell: Power Pad, SpeechPAD, Control Without Keyboards (software for Power Pad to speak as a communication board plus), Apple cable that fits Commodore Power Pad, keyboard emulator under development, and other related items.

Innocomp
33195 Wagon Wheel Drive
Solon, Ohio 44139 (216) 248-6206
- They sell: Say-it-All II Plus (Portable dedicated device with speech synthesis) and Say-it-Simply Plus (Portable Power Pad Communication device that is programmable).

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8503 Rhode Island Ave.
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- Simple switches and toy adapters. Also, Light Activated switch, and books on how to construct homemade devices for the severely handicapped.

Prentke Romich Company
1022 Heyl Rd.
Wooster, Ohio 44691
(216) 262-1984 (in Ohio, call collect)
1-800-642-8255
- They sell: Touch Talker, Light Talker, Minspeak Software, switches, Viewpoint Optical Indicator (visible light head pointer), and other products for communication, computer access, and environmental control. They have a staff of trained professionals for technical assistance. They also publish a newsletter: Current Expressions.

Talktronics, Inc.
27341 Eastridge Dr.
El Toro, CA 92630
- They sell the 64-Talker and the VIC-Talker, speech synthesizers for the Commodore 64 and VIC-20.

TASH Inc.
70 Gibson Dr.
Markham, Ontario, Canada L3R 2Z3
- They have a variety of Computer related products including keyguards, expanded keyboards and switches.

Toys for Special Children
8 Main Street
Hastings-on-Hudson, NY 10706 (914) 478-0858/0960
- Steven Kanor Ph.D., Medical Engineer. He sells a large variety of adapted toys and switches.

Zygo Industries, Inc.
P.O. Box 1008
Portland, OR 97207-1008 (503) 297-1724
- They sell a variety of switches and good mounting hardware. They also carry the Macaw, the Talking Notebook and other communication products.

SELECTED ORGANIZATIONS AND PUBLICATIONS

The Center for Special Education Technology
1920 Association Dr.
Reston, VA 22091

They have a telephone based service called TECH-TAPES. You can call the toll free number and request to hear a tape on a variety of topics by entering a 3 digit number. You can request more information after each tape. They will send you a list of tapes available. 1-800-345-TECH.

Closing The Gap
P.O. Box 68
Henderson, MN 56044
(612) 248-3294

They publish a very useful newsletter concerning use of computers for education and rehabilitation. They have a wide variety of resources as well as conduct workshops and courses

ISAAC - The International Society for Augmentative & Alternative Communication
USAAC - U.S. Chapter - includes ISSAC membership
USAAC
c/o Barkley Memorial Center
University of Nebraska
Lincoln, NE 68588

Membership includes "Augmentative and Alternative Communication Journal" and two optional, excellent newsletters: "Communication Outlook" and "Communicating Together."

Trace Reasearch and Development Center on Communication, Control, and Computer Access for Handicapped Individuals
S-151 Waisman Center
1500 Highland Ave.
Madison, WI 53705

This center offers an extensive list of books and reprints of articles concerning computers and the handicapped. Gregg Vanderheiden conducts excellent workshops around the country concerning non-vocal communication and computer access.

Selected Books on Augmentative Communication and Adaptive Play

Blackstone, Sarah w. (Ed.). (1986) Augmentative Communication: An Introduction. Rockville, MD
-Order from: American Speech-Language-Hearing Association
10801 Rockville Pike
Rockville, MD 20852
(301) 897-5700

Goossens', Carol, and Crain, Sharon, (1986) Augmentative Communication Assessment Resource and Augmentative Communication Intervention Resource. Birmingham, Alabama
-Order from: Don Johnston/Developmental Equip., Inc.
P.O. box 639, 1000 N. Rand Rd. Bldg. 115
Wauconda, Il 60084
(312) 526-2682

Musselwhite, Caroline (1988). Communication Programming for Persons with Severe Handicaps. Boston, Mass. College Hill Press - Little, Brown and Co.
-order from: College Hill Press
(800) 343-9204

Musselwhite, C. (1986) Adaptive Play for Special Needs Children. San Diego, CA: College Hill Press / Little, Brown and Co.
-order from: College Hill Press
(800) 343-9204

Musselwhite, Caroline. (1985) Signs and Symbols for Children
-order from: Caroline Ramsey Musselwhite
83 Keasler Rd.
Asheville, NC 28805

VIDEO TAPE: Teaching Total Communication to Young Children with Down Syndrome or Other Developmental Delays
-order from: TOTALCO Educational Products
7102 Blanchard Drive
Derwood, MD 20855

Augmentative Alternatives

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Introduction

Many patients/families and staff members often feel that the newest developments in augmentative communication would be the best and most desirable alternative for a particular patient. Although many of the electronic pieces of equipment have become quite sophisticated and versatile, not all patients have the aptitude or financial resources to obtain and use them successfully.

Speech language pathologists are often in the position of having to prepare iron clad justifications for ordering expensive equipment, or on the other hand, are responsible for explaining to staff/family members why such equipment would not be beneficial to a certain patient. To date, there have been no assessment tools designed to objectively determine the appropriateness of general types of augmentative communication. Therefore, the authors developed a systematic approach to aid in this determination.

Electronic vs. Non-electronic Communication Devices

The benefits of electronic communication devices are numerous: they are fascinating, flexible (with different input/output modes), they are often programmable, and can be personalized for individual clients. However, electronic communication devices can be very expensive and cost as much as $5000. Though, in some cases, special funding is available, this may not be true of many patients in need of an augmentative system. Factors which also can contribute to negative indicators related to electronic devices include the lengthy delivery date and the lack of resources for repair costs, back-up aids, and extra supplies.

Clinicians cannot always be certain about the appropriateness of a system until it is available for use. Oftentimes, this requires purchasing a system which may not be the best for the patient.

Arranging for the functional mounting of conspicuous and cumbersome devices is also a negative feature. Many patients also have cognitive impairments that may make training to use the electronic system difficult.

On the other hand, non-electronic devices are generally more transportable and easily reproducible. As they are usually designed with input from the patient and family, these devices are often more personalized and functional for individuals. Clinicians often may incorporate successful therapy features which makes training the individual easier. Materials utilized in constructing these devices are much less expensive, also.

Non-electronic communication systems also have limitations. They are without auditory feedback or output, making them useless without another person present. They are not as fascinating, and may get lost easier because they appear "less expensive/valuable."

Predicting the Success of Augmentative Communication

With all of the positive and negative aspects of two different types of communication aids, it is not surprising that clinicians often find themselves unsure when determining the most appropriate method for augmentation. It is also common for augmentation to be ordered, only to find that the equipment is not or cannot be used by the patient. Because the authors had many successful and unsuccessful dealings with augmentative communication, a retrospective study was done in order to determine what variables contributed to the success and lack of success when attempting the use of augmentative communication.

The **Predictor of Appropriate Augmentative Communication Strategies (PAACS)** is the result of that study. By using the PAACS, potential obstacles are identified that may complicate the use of augmentative communication strategies, and a difficulty quotient may be obtained to indicate the likelihood of success with such a strategy.

· To use the PAACS, the clinician simply highlights the boxes that correspond with characteristics that describe his/her patients. If the clinician has difficulties deciding between two qualities, because he/she feels that both statements describe the patient, then he/she should highlight both qualities. On the contrary, if a particular set of qualities doesn't fit the patient, none of them should be marked.

· Striped areas are "warning zones", and indicate that if your patient has this particular quality, that this is a potential obstacle to success. These qualities were judged to have a negative impact on the success of augmentation in the study mentioned above. The shaded areas also indicate potential obstacles, but were not judged to be as detrimental to the success of augmentation as the warning zones.

In order to determine the likelihood of success with electronic devices (E), non-electronic devices (N), and education of staff, family, and patient (Ed), the number of characteristics highlighted are totalled. The difficulty quotient for electronic devices is then obtained by totalling the number of warning zones and grey areas in column E — and dividing that number by the total number of characteristics checked. Difficulty quotients for non-electronic and education are done in the same manner.

Our study indicated that if a difficulty quotient exceeded 35% for a particular method (E, N, or Ed), success for that method was unlikely. Occasionally, a patient received a score of less than 35%, but failed to use augmentation successfully. We found that the reason was usually highlighted in a warning zone. Therefore, if a patient receives a difficulty quotient of less than 35%, it is still imperative that the clinician examine the warning zones and grey areas, and determine in advance how and if these obstacles will be overcome.

A sample evaluation form follows. To obtain a complete evaluation package with an instruction booklet and reproducible forms, please send $15.00 payable to :

Evans and Lane
P.O. Box 752291
Memphis, Tennessee 38175-2291

Predictor of Appropriate Augmentative Communication Strategies (PAACS)

Audrey L. Lane Yolanda T. Evans

Patient Name:_____ Date:_____
Evaluating Clinician:_____ Disorder:_____

E N Ed

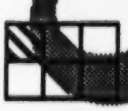
A. Financial Resources
   1. Has resources
   2. No resources
   3. Non-patient funding available

B. Cognition/Intellectual Aptitude
   1. Awareness, recognition, and understanding are consistently good
   2. Awareness, recognition, and understanding are intermittent

   3. Long term memory for details/processes is unimpaired
   4. Long term memory for details/processes is impaired but regained with prompting

   5. Patient has to relearn processes everyday
   6. Patient can match pictures to objects
   7. Patient cannot match pictures to objects

C. Motivation/Attitude
   1. Patient is an initiator of communication
   2. Patient initiates communication of needs only and also responds to others



   3. Patient only responds to communication
   4. Patient cooperates in speech therapy and/or demonstrates eagerness to learn and develop alternate methods

   5. Patient appears to be indifferent toward speech therapy (neither shows significant like or dislike)

   6. Patient is uncooperative in therapy
   7. Patient is frustrated with inability to communicate
   8. Patient is receptive to alternative methods of communication

   9. Patient is not receptive to alternative methods of communication
   10. Patient desires a discrete method of communication
   11. Patient does not mind being noted as different

Sample

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D. Specific needs

1. Patient needs augmentation immediately
2. Patient can wait for augmentation more than [illegible] weeks
3. Patient needs audible output
4. Patient needs to use on the telephone
5. Patient needs maximum portability
6. Maximum portability not necessary
7. Patient needs extra durability
8. Durability is not necessary
9. Patient's communication aptitude is limited to communicating pleasantries and basic information
10. Patient's communication aptitude is limited to communicating pleasantries, basic information, and basic needs
11. Patient needs to communicate emergencies
12. Needs for extensive communication, entertainment, and to return to work

E. Communicative abilities

1. No verbal output
2. Grunts, vowels only, unintelligible
3. Intelligible/accurate 26-50% of the time
4. Intelligible/accurate 51-75% of the time
5. [illegible] accurate more than 75%of the time
6. Cannot spell
7. Spells some single words with occasional errors
8. Spells sentences
9. Indicates correct yes/no response to questions 90% of the time
10. Yes/no response to questions less than 90% accurate
11. Patient augments communication with gestures spontaneously and intelligibly 80% of the time
12. Spontaneous gestures are intelligible less than 80% of the time
13. Patient only understands contextual/conversational niceties

Sample

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14. Patient rarely performs commands other than those with with contextual cues (e.g. "Hand me that pencil.")

15. Patient understands complex contextual commands (e.g. "Put the cards in the box and then put them in the drawer for me.")

F. Physical abilities

1. Patient has no functional use of fingers/hands
2. Patient has use of only one hand (and
3. Patient has normal use of both hands/fingers

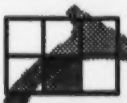
4. Patient has impaired use of both hands/fingers
5. Patient can only move one part of his body accurately in two distinctively different ways (e.g. eyebrow up/down or elbow in/out)

6. Patient is lying in bed at all times
7. Patient in bed at all times but can sit up
8. Patient sits in wheel chair and ambulates

9. Patient can visualize at normal reading distance
10. Vision is functional only with pictures/symbols two inches or larger at reading distance

11. Vision is poor and non-functional

G. Communication partners' qualities



1. Literate
2. Illiterate

3. With patient on regular basis
4. Hearing impaired

5. Can regularly assist/participate in communication interactions
6. Unable to participate in timely interactions
7. Has difficulty managing/maintaining instrument for patient

Electronic (E) difficulty quotient: _____/_____ = _____%

Non-electronic (N) difficulty quotient: _____/_____ = _____%

Education (Ed) difficulty quotient: _____/_____ = _____%

Difficulty Quotients exceeding 35% indicate an unlikelihood for success with that particular strategy.

Sample

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A WHOLE-AIDED LANGUAGE APPROACH: Educational Teamwork Which Incorporates Language, Computers, Play, and Early Readiness Skills into a Story Framework

Pati King-DeBaun, M.S.
Kelly Lampman, B.S.E.D.
Bartow County School System
Cartersville, Georgia

INTRODUCTION

Language learning and ways to present the language curriculum continue to be a chief concern in the classrooms of both nonhandicapped, speaking and handicapped, nonspeaking students. New ideas are being generated about how young children acquire language skills (i.e., reading, writing and oral language.) One theory, whole language, operates on the premise that children acquire language through using it, instead of practicing it's separate parts and then assembling those parts. A teaching model that emphasizes aquisition through real use (not practice exercises) is the best method for assisting in the learning of reading, writing and other skills (Altwerger et. al., 1987).

Many augmentative communicators grow up to be illiterate adults, and those who do gain literacy skills often demonstrate difficulties with grammar and spelling. If children with severe speech impairments do not develop literacy skills, their access to language will be limited (Cohen, 1988). Studies cited within the January 1989 edition of the Augmentative Communication News suggest that quantitative and qualitative differences exist between the early literacy experiences of handicapped, nonspeaking children and those of their nonhandicapped peers, with the nonhandicapped children receiving more and richer experiences. Once again, there is a gap between the oral world and the nonoral world. Goosens' and Elder (1988), believe that if children are expected to use communication spontaneously and interactively, they should be provided with models and opportunities to do so. Thus, their development and ideas of engineering a preschool classroom environment for interactive symbolic communication adheres to the theory that language is learned by real opportunities and experiences to use it, not contrived practice exercises.

In concentrated efforts to provide the best means for teaching augmented systems to users, often the reading and writing aspects of language are forgotten. Looking at language from a "whole language" viewpoint, that reading, writing and expression are all integral parts of language (not separate entities), can perhaps change the approach in which we present materials to our nonverbal children. If reading, writing and expression work together to compose language, we, as educators need to expose our augmentative communicators to, and present them with numerous opportunities for reading and writing. These opportunities need to be present at an early age, if we expect these individuals to become literate adults.

METHODS

Having engineered an interactive symbolic classroom (Goosens' and Elder, 1988), the expressive opportunities for communication were set in place. Our dilemma was in providing a systematic way to expose reading and writing concepts to very young children (i.e., preschoolers). Much of the interactive literature available, with a few exceptions, tended to lose the interest of our children. Additionally, it was often too wordy, and the pictures presented were often too busy for the children to discriminate between characters and predict what was happening or what was going to happen. We felt it necessary to provide the children with more meaningful stories, which reflected familiar experiences, so they could expand on and identify with those experiences. Under this premise, we developed our own stories with the following characteristics: 1) they reflected familiar activities and routines, 2)they were highly repetive for predictability, 3) each story allowed for some openness to develop creativity and use of language, 4) the pictures depicted actions and concepts vividly with limited visual distractions, 5) absurdities and sabotage were built into the stories for active student participation and 6) dialogue and script were included for carryover into actual activities and routines. Each story was photographed on slides and an adapted slide projector (Gossens' and Crain, 1986) was used to present the stories.

From the development of these stories flowed a unique opportunity to provide children with a systematic way to learn and use symbolic language, create new language, and experience successful, meaningful communication. From our stories we were able to generate games, music, play, art, computer, cooking, pre-writing and integrative activities. Incorporating our stories into the classroom activities and routines provided our nonverbal children with opportunities to utilize newly acquired skills in a variety of settings, alleviating the need for drill or practice. Furthermore, the use of an adapted slide projector enabled our more physically disabled students to become actively involved in the stories, and provided other augmentative users with large, compelling pictures about which to communicate.

RESULTS/CONCLUSIONS

As a result of this "whole-aided language" approach, we were providing opportunities for successful learning without the painful drilling often associated with some therapeutic models of learning symbolics (communication), reading and writing in a special needs classroom. Several external benefits began to develop from this program. First, the teacher and speech pathologist worked together to create opportunities for language. McDonald (1977) believes that one of the first tasks for a successful program for nonverbal students is the integration and involvement of teachers. Secondly, it has been proven that group instruction is an effective teaching strategy for severely handicapped individuals (Brown, et. al., 1980; Favell, et. al., 1978). With this approach, group activities were easily formed

providing opportunities for interactions with classmates and nonhandicapped peers. Research has proven that carryover from clinical sessions to the classroom, the home and other environments is crucial for the effectiveness of any communication program for students (Shrewsbury et. al., 1985.) As another benefit, this carryover was easily accomplished by presenting language in a story-theme framework. Additionally, the training of parents and paraprofessionals can sometimes be a difficult task, however, using the "whole-aided" language approach, training was simplified. Stories reflected interactive language, predictability, sabotage, openness and pauses, providing trainees with visual models easily reproduced in play activities and actual situations. Finally, data collection became more manageable when vocabulary concepts were incorporated into the total school program.

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Thomas C. Kramer

When I was about three years old I had speech therapy, which consisted of having to blow through a straw, breath control and several other exercises which I can't remember. This happened once or twice a week for two years. I went to school when I was five years old; starting in 1952 at Higbee School for handicapped children in Bethlehem, Pa. There I received speech therapy three times a week for two months out of a school year. So you see I really didn't receive much speech therapy at all.

In 1960 I went to the new Spring Garden school in Bethlehem. There they had large place for the handicapped and I received the same therapy as I had at Higbee with the same therapist - but this only lasted maybe two years. That was the end of my speech therapy.

Before 1961 according to my mother, I would move my head to let them know what I wanted and then they would ask me what I wanted and point to it. As I got older I tried to spell but not too many people took the time to try to understand me or to help me to in communicating with this method.

I was thirteen when I asked my Dad to make a device for my forehead, a stylus, so I could use the typewriter at school. My Mom and Dad also put together tounge depressors with A B C's and numbers on them. These were put together with tape so they could be folded and I could carry them in my pocket. I used my headband to point to the letters to spell out the word to anyone who took the time to try to communicate with me. Up until that time the teachers didn't know if I was learning because I couldn't communicate with them until I dreamed up this "head band." Then they knew that I wasn't retarded and that everything that they taught me had gotten through. It worked wonderfully. From there I went to the electric typewriter and now I'm in computers.

My family knew my signs and understood them, but people on the outside of our family didn't or couldn't understand me and there were and are a lot of people who

just won't take the time to understand me. As late as 1972, when I was 24 years old I was evaluated as having severe mental retardation, and my social age was 1.03. And in the next paragragh the psychologist says I can use the typewriter for communication. Now, you tell me how could I type when I'm severaly mentally retarded? (see attached page)

In 1980 I got a Handy-Voice (Voice box), through the speech therapist at U.C.P. of Lehigh Valley. That was a breakthrough for me, to speak to people with some kind of voice instead of going to the trouble of spelling words out letter by letter. Since that time, I have spoken to Girl Scout Groups, church groups, legislators in Harrisburg, and testified at a House Resolution Hearing, advocating for recognition of the need for services for disabled adults. As a matter of fact, I also spoke to a Sunday School classes and gave the benediction at church. With this communication device I can talk with people who can't spell, and to people off the street, and to you, right now!

In 1981 I got my G.E.D. (High School Equivalancy Diploma) with help from the U.C.P. staff. I also went to Moravian and Northampton County Commuity Colleges for a couple of courses in computer programming. I met a man at U.C.P. who is very good at computers and programming on any kind of computer. He was volunteering his services to U.C.P. He came back to the adult group to talk with me and we became very good friends. He and I made a couple of programs together and he taught me a lot more on how to program.

Through a special grant we got a Commodore computer, floppy disk drive, and Commodore printer. I was able to adapt my programs to the needs of particular clients and develop curriculum that are geared to their individual levels of math capability. I met with clients two to theee times a week to work with them to improve their math skills. With the floppy disk drive and the printer, I was able to store information on their performance and print out a daily and monthly progress report on each client.

I held this position for three years, until last March. With the untimely death of my mother, my dad and I

moved down here to Alabama with my cousin and her husband and daughter and of course her animals, out in the boondocks, I'm a city boy, born and raised in the city. I miss not being able to have some kind of work. My dad has cancer, I feel he wants me to stay close to him right now. But I still miss the routine of getting up early and going to work and seeing my co-workers and the clients. I need to go out socially too. I'm a normal guy, I like to be around pretty women, and also go out on a date with the "pretty things whenever I have the opportunity." But it is very hard out in the community to meet a nice, and caring and also willing woman to give us a chance. They see only our shells and not the inside of us, and they see somebody in a wheelchair or in a cart, such as I'm sitting in right now.

Four years ago I bought a Touch-Talker with Minspeak. I had to teach myself how to work the box because everybody was too busy or they didn't want to work on it with me, so, I thought to myself, "be that way! I will learn it on my own." I taught myself this much but, I still have to learn more about the Word Strategy System. There are a lot of new things I must learn about this box.

The Touch-Talker is a wonderful breakthrough which eenables us to finally break the chains that binds our minds and greatly inhibits our acceptance as a social and intelligent human. In the future I invision technological advances which will enable "real time" communication. Given the current state of the art of bionic engineering and voice print analysis the vocally impaired people, like myself have a rekindled hope. instead of the frustrating efffort to communicate the basic needs of life, it would be wonderful to have our minds released from captivity and join in the free flight of interpersonal communication.

PSYCHOLOGICAL EVALUATION

KRAMER, THOMAS
D.O.B. 5/4/47
Date of Evaluation: 1/22/72
Techniques Administered: Interview; Vineland Social Maturity Scale.

Thomas Kramer was seen for a psychological evaluation on January 22, 1972. No measurement of Thomas's Intellectual capacity could be obtained, he is a paraplegic who is also severely handicapped by a complete lack of speech. It was not possible to administer either Verbal or non-verbal test, consequently the Vineland Social Maturity Scale was used with his parents as informants. The results of this instrument indicate that Thomas has a social age of 1.03, in contrast to his chronological age of 24 years 8months.

Thomas is able to communicate by the use of a typewriter, but only by the use of a special headband device, which allows him to strike the keys with the movement of his head. He is also able to point out letters on a series of tongue depressors and thus communicates by spelling out the words. Indications are that his comprehension may be fairly adequate and he makes every effort to be cooperative, but it is in no way up to the level of "normals" of his present chronological age.

In summation this is twenty-four year old male with severe mental retardation compounded by a lack of speech and paraplegic of organic etiology.

GETTING THE WORD OUT TO THOSE IN THE TRENCHES; A MODEL FOR EXTENSIVE, IN-SERVICE TRAINING IN AUGMENTATIVE / ALTERNATIVE COMMUNICATION FOR PERSONNEL WITHIN THE EDUCATIONAL SETTING

David M. Krolikowski, M.A., CCC-SLP
Board of Cooperative Educational Services,
Second Supervisory District
Suffolk County, New York

This paper shares the design, implementation and results of an extensive, hands-on, eight session AAC workshop series provided to various members of the educational staff of the Board of Cooperative Educational Services, Second Supervisory District located in Suffolk County, New York during the fall of 1988. This paper demonstrates how staff members were introduced to basic AAC concepts and actually participated in AAC system prescription and development through the utilization of various fictitious case examples. The format of these training sessions provided participants with hands-on experience in the development of 'low-tech', manual communication systems as well as 'high-tech', voice output communication systems. Original software which simulates a direct- select, voice output communication aid utilized during the workshop series is also presented and discussed.

Augmentative / Alternative Communication (AAC) services are currently provided to the severely speech and writing impaired school-aged population through a wide variety of service delivery models ranging from traveling multidisciplinary teams to specialty centers and clinics. It can be argued however that regardless of where or in what manner a student receives the initial evaluation and preliminary training services, the actual burden of AAC system maintenance, expansion and overall development often falls on the shoulders of professionals working within the school environment. Although occasionally teachers, clinicians and assistants within a school system who are new to the field of AAC are provided with brief orientation workshops, these sessions are painfully insufficient and fail to establish even a basic level of experience and practical knowledge for those professionals who in reality, may have the greatest impact on and responsibility for, a student's successful utilization of an AAC system. The current in-service, workshop series attempted to at the least, provide all participants with a thorough, up-to-date overview of this enormous topic and at the most, facilitate the development of increased skill in the application of communication augmentation strategies, techniques, and aids with severely speech and writing impaired students.

The staff members who participated in this initial workshop series reported various

levels of skill and experience in the area of AAC. The administration of a pre-workshop interest inventory revealed that 25% of the participants had never utilized any communication augmentation techniques and had only a limited exposure to the field of AAC in general. An additional 50% revealed that their knowledge of communication augmentation techniques was limited to the utilization of sign language and simple manual communication displays. The remaining 25% of the attending staff responded that they did have a significant degree of experience in the area of AAC, however expressed a strong need and desire to increase their skills in the areas of 'device operation', current theory and intervention practices. It should be noted that all staff members who participated in this workshop series did so on a voluntary basis.

GAINING SUPPORT

The most crucial step in establishing this AAC in-service workshop series was to secure the appropriate level of administrative support. The reality of teacher/ clinician release time, access to a training facility as well as access to equipment depended on the support of administration. As the number one concern of most educational agencies is to provide 'direct services' to its students, it must be demonstrated how in-service training of staff will translate directly to an increase in quality services for the student in a timely and cost effective fashion.

This author, in citing the successful and exciting results of the various training programs offered by the Pennsylvania Assistive Device Center was able to elicit initial, tentative support for the current project[1]. Once this initial support was established the development and presentation of clear, concise goals and an explicit session by session agenda secured the remaining support necessary to get this 'training bird off the ground'. A description of each session's content can be found at the close of this report.

GOALS OF IN-SERVICE TRAINING

The following goals were outlined for each participant of this in-service training series which was conducted on a bi-weekly schedule from October 1988 through January 1989 :

1) To gain a comprehensive exposure to the field of Augmentative / Alternative Communication.

2) To gain an understanding of what specific populations or etiological groups benefit from the application of Augmentative / Alternative Communication strategies.

3) To understand the needs and recognize the potential of severely speech and writing impaired students within the home, classroom and vocational settings.

4) To gain an understanding of assessment and intervention practices within the field of AAC.

5) To gain experience in the development, construction and implementation of 'multi-component' AAC systems through hands-on exposure.

and finally,

6) To gain an understanding and appreciation for the characteristics, operation and appropriate use of various 'high-tech', electronic - voice output communication aids.

TRAINING STRUCTURE AND IMPLEMENTATION

It should be recognized from the start that no single in-service workshop series could ever hope to present all of the information available on the topic of AAC and the treatment of severely speech and writing impaired individuals. It was the intent of this author on the other hand, to develop basic, functional skills on the part of each participant which could be utilized immediately with severely communicatively impaired individuals within the educational environment. In an attempt to develop within each participant actual skills rather than regurgitated book knowledge, the following methods and tools were utilized during the training sessions :

Fictitious Case Studies :

In order to establish a reference point for all discussions and activities, five fictitious case studies were given to the participants during one of the initial sessions. The case examples detailed individuals of school age who presented with the following etiological conditions : mental retardation, cerebral palsy, degenerative neuromuscular disease, and closed head injury. These fictitious cases were carefully developed in order to illustrate a wide range of possible user profiles. For example, several profiles described individuals who could directly access a communication display, while some profiles described individuals who could not directly access a communication display. It was also hoped these profiles would present many of the problems normally encountered in the delivery of AAC services within the educational arena. When possible, videotaped segments simulating aspects of these fictitious cases were also presented.

Treatment Teams :

Along with the provision of fictitious case studies, the participants were divided into 'treatment teams' responsible for assessing and then developing a treatment plan for each case example. As various AAC concepts were introduced throughout the in-service series, the 'treatment teams' were encouraged to apply these concepts to the various cases as appropriate. At the close of the in-service series each 'treatment team' participated in a round of 'State Your Case' were all their findings and solutions for each fictitious case were presented and then critiqued by the other 'treatment teams'.

Communication System Construction :

During the in-service workshop series each participant, as part of his or her team, was required to develop appropriate 'low-tech' components for each fictitious case's overall, 'multi-component' AAC system. In some cases plexiglass eye-pointing systems with context specific overlays were developed, in others series of pictographic, manual communication displays were developed. This activity was able to present in a truly functional fashion, such important concepts as symbol system selection and vocabulary selection and organization.

As various voice output communication devices were presented during the training

sessions, when possible, the participants were introduced to system functions and programming instructions in direct reference to the various fictitious cases at hand. When appropriate, 'treatment teams' also developed and programmed overlays for the various fictitious cases on the actual voice output communication aids they 'prescribed'. Some of the voice output communication devices to which participants were exposed included the following: Introtalker, Touch Talker, Light Talker, Super Wolf, EvalPac, SpeechPac, Alltalk, and the Voice 135.

Talking Touch Pad :

Due to the limited number of communication devices available, participants were unable to receive the degree of hands on training which would have been most desirable. In an attempt to provide everyone with a greater degree of experience in the use of voice output technology, each participant was provided with a copy of the B.O.C.E.S. 2, Talking Touch Pad[2].

The Talking Touch Pad software program transforms an Apple II computer with Echo speech synthesizer[3] and Muppet Learning Keys[4] into a stationary, direct selection, voice output communication aid. This equipment has been utilized within the special education division of B.O.C.E.S. 2 over the course of the past several years and has functioned both as a dedicated device for some students and as an integral part of aided language stimulation activities[5].

In addition to the tools and methods described above, all participants received an extensive array of hand-out materials which ranged from the obvious and obligatory bibliography, to a list of "Who's Who and Where's Where" in augmentative communication. From the start of this project the author identified an obligation to provide all participants with the direction necessary to gain additional information independently once the formal training sessions were terminated.

RESULTS OF THE CURRENT IN-SERVICE TRAINING PROJECT

All participants reported an increase in knowledge of, and appreciation for, the use of AAC strategies, techniques and aids with the severely speech and writing impaired student. It should be noted that this personal observation provided by each participant, was further supported by the results of a pre-test/ post-test measure.

As a result of the enthusiasm generated through this workshop series, an 'AAC Lunch-Time User's Group' was subsequently formed. Several of the participants from the workshop series sacrificed personal time in order to meet with this author and explore additional AAC related topics. Due in part to the 'noticeable' increase in the skill and enthusiasm of the participants from the initial workshop series, an additional two groups will receive similar training over the course of the coming school year.

GENERAL AGENDA

Session One

An Introduction to Augmentative / Alternative Communication

- Overview
- Terminology
- Philosophy

Session Two

The Assessment / Evaluation Process

- Fictitious Case Examples
- Characteristics of Communication Augmentation Systems
- Selection Techniques In Detail
- Scavenger Hunt

Session Three

The Assessment / Evaluation Process

- Determining Needs
- Identifying Abilities
- Delineating Options

Session Four

The Assessment / Evaluation Process

- Gaining Access to Communication, Education and Recreation
- Overview of Switch Access
- "Pin the Switch on The User'

Session Five

The Issue of Vocabulary Selection

- Vocabulary Selection Techniques
- The Use of Lists, Dialogues and Inventories

Session Six

Representation and Organization of Vocabulary Units

- Symbol Selection
- Vocabulary Organization
- 'From the Fire into the Frying Pan'

Session Seven

High - Level Organizational Systems / Use of Electronic Technology

- The Effect of Voice Output
- Abbreviation Expansion
- Linguistic Prediction
- Semantic Compaction / Minspeak

- Device Operation

Session Eight

Intervention Issues / In-Service Summation

- Philosophy of Intervention
- Generating Support
- Final Fictitious Case Presentations

REFERENCES

[1] Colleen Haney, Pennsylvania Assistive Device Center, 150 South Progress Avenue, Harrisburg, PA 17109

[2] The Talking Touch Pad is available through: B.O.C.E.S. 2, Microcomputer Resource Center, 15 Andrea Road, Holbrook, New York 11741

[3] The Echo Speech Synthesizer is available through: Street Electronics, 1470 East Valley Road, P.O. Box 50220, Santa Barbara, CA 93150

[4] The Muppet Learning Keys are available through: Sunburst Communications, 39 Washington Avenue, Pleasantville, New York 10570

[5] Goossens', C., Crain, S. & Elder, P., (October, 1988). 'Engineering the Preschool Classroom Environment for Interactive Symbolic Communication.', Workshop presented at the International Society for Augmentative and Alternative Communication (ISAAC), Biennial Conference, Anaheim, CA.

ASSISTIVE TECHNOLOGY: CREATING A PARENT NETWORK

Andi Lennon, M.S., CCC-SLP
Pam Harnden, M.S., CCC-SLP

The parents of augmentative communication users are faced with unique challenges at home, in school and within the community. In an effort to address these specific issues, a parent network, **Parents of Augmentative Communication Talkers (P.A.C.T.)**, was established for the purposes of:

- exchanging ideas for innovative programming of augmentative communication aids;
- sharing strategies regarding integrating children with disabilities into the least restrictive environment
- providing an atmosphere of support and understanding;
- inviting local and national experts in the disability and technology related fields for the delivery of presentations;
- sponsoring social gatherings to facilitate peer interactions among children using AAC systems.

The following provides an outline of the key elements and how they were addressed during the formation of the P.A.C.T. network. These general areas will most likely be encountered by others considering starting a group such as this.

Formation
Professionals working with augmentative communication users were informed regarding the formation of P.A.C.T. in order to solicit potential members. In addition, vendors were asked to contact families who have bought or were in the process of buying augmentative communication devices. As a result of these methods, plus parents networking with others, P.A.C.T. has an extensive membership and mailing list.

Structure
It was decided that the members, rather than the founders of the organization, would direct the group by providing suggestions, topics of interest, meeting dates and the format of the meetings. It was the parents' decision to alternate informational/educational meetings with social gatherings for both themselves and the children. Educational meetings provided speakers addressing: advocacy, state issues in augmentative communication, Minspeak and product development, funding and assistive technology and services. A Christmas party and potluck dinners and picnic served as social gatherings.

ORGANIZATIONAL DETAILS

• LOCATION •
A central location was established through polling the geographical representation of the members. Social functions were held at appropriate facilities for each function, and at locations that were accessible and could accommodate the number of wheelchairs.

• ANNOUNCEMENTS •
Each meeting was announced to the members of P.A.C.T. through a computer generated announcement/invitation sent through the mail. Parents volunteered their time to address the announcements, make phone calls regarding attendance and provide refreshments for each meeting. Meetings were generally held every 6 weeks.

• OFFICERS •
Officers were nominated and elected by the members within the first six months of the formation of P.A.C.T. The elected officers included representation from both founding members and parents.

• FUNDS •
It was decided that P.A.C.T. should assume the responsibility of payment for printing, postage and miscellaneous expenses related to meeting announcements. As a result, a checking account was established to retain funds received from membership dues and donations.

Generous donations were also received from related companies (Prentke-Romich Company, Invacare, etc.) and non-related companies (McDonalds, a local costume shop, film store, etc.) to aid in covering expenses incurred in social events.

• FOCUS •
Social functions were provided for the augmentative communication users and their siblings. Approximately 25 users attended a Christmas party, and 20 were present at the summer picnic. The social events were multi-purpose: fun for the children, educational for the parents, and provided the children an opportunity to meet other children that were utilizing the same means for communication.

Educational functions covered a wide range of topics at the members requests. In the first 8 months of existence, P.A.C.T. has sponsored the following speakers bureau:

- Bruce Baker
  An Introduction to MINSPEAK
- MaryAnn Romski
  Augmentative Communication in GEORGIA: Past, Present and Future
- Bonnie Webb
  Parent Advocacy: the IEP Process
- IBM
  A Visit to the IBM National Support Center for Persons With Disabilities

In addition to the above speakers, at each meeting, one parent has had the opportunity to "present" his or her child to the group. This has proven to be a highlight for the other members in attendance.

PUBLIC AWARENESS

Increasing public awareness is a major focus of the network. The members of P.A.C.T. feel that the community should be made aware of the needs and interests of children utilizing augmentative communication devices. This has been accomplished by the following methods:

- PUBLICATION OF ARTICLES
  - local / regional circulation
  - national circulation
- PRESS RELEASES
  - to cover social events
  - distributed to radio, TV and newspaper
- TV COVERAGE
  - of social events
  - on local evening news
- NEWSPAPER COVERAGE
  - of Christmas party and picnic
  - in Sunday Atlanta Journal-Constitution
- INFORMATIONAL BROCHURE
  - covering all aspects of P.A.C.T.
  - distributed to interested parents, professionals and educational organizations
- CONFERENCE PRESENTATIONS
  - RESNA/USSAAC conference
    June 1989 - New Orleans, La.
  - Southeast Augmentative Communication Conference
    October 1989 - Birmingham, Al.
  - Touch the Future
    November 1989 - Atlanta, Ga.

FUTURE GOALS

As P.A.C.T. has proven to be a valuable organization for both the parents and children it serves, future growth will address the following goals:

- USSAAC involvement
- Increasing membership
- Increasing parent involvement

- Circulation of informational brochure
- Establishment of device lending library
- Involvement with P.L. 100-504

REPLICATION

This network is successfully addressing the needs of parents whose children will be or who are currently using augmentative communication systems. The members of P.A.C.T. are interested in sharing this concept with other parents or professionals to encourage their participation in or replication of this network. Ultimately P.A.C.T. would like to see this model replicated throughout the state of Georgia, thereby creating a statewide network. A statewide network would:

- increase the likelihood of impacting state regulations and legislation regarding the education of children with disabilities;
- work to influence state and third party reimbursement policies;
- participate in the formation of a state USSAAC chapter; and

This network lends itself to being replicated for the following reasons:

- start up costs are low
- requires limited time commitment
- parent directed

INFORMATION

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AUGMENTATIVE COMMUNICATIONS FOR THE POST-LINGUAL, NONVERBAL ADULT

Melissa M. Mahone, M.S.
Center for Speech and Language Pathology
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This presentation will address some key aspects of the assessment and subsequent fitting of augmentative communication devices for the adult with acquired nonverbal status. The population that is addressed are those individuals who have lost speech because of neurological insult such as ALS (Lou Gehrig's disease), multiple sclerosis and Parkinson's disease. It also includes those with severe dysarthria, or apraxia, who are cognitively intact, and those laryngectomees, who because of surgery or radiation effects are unable to communicate using esophageal speech or electrolarynges.

Other individuals who may also fall within this population definition are: the quadraplegic, the person with a temporary or permanent voice disorder that renders his or her speech unintelligible, the glossectomee, the ventilator patient, and the stroke or head injured person that may have regained speech but finds it inadequate for primary communication.

The population to be addressed does not include those adults who have never attained functional speaking or reading skills; i.e., the mentally retarded and severely, multiply disabled.

The key words in the population definition of the population to be addressed are: **adult, cognitively intact and functionally nonverbal.**

While the population definition just described may appear narrow to those of you serving a wide spectrum of disabilities, I have purposefully selected this population because it is comprised of often overlooked people that can benefit immeasurably from devices based on emerging technology with which I wish to make you familiar.

I do not pretend to know all of the devices that are available on the market today, nor will I have time in this presentation to discuss details of programming those computer devices with which I am familiar. I will, however, try to acquaint you with some devices that I have used successfully with the selected population. I will also share some of my experiences with you relative to the prescribing and acquisition of augmentative communication products. My goal is to tell you enough about the utility of augmentative communication devices to whet your interest in searching out devices that may have useful application to some of your own cases.

PRODUCT EVALUATION

There are many augmentative communication devices on the market today. I certainly have not used all of them. In fact, there are many that I have not even seen. It is exceedingly difficult to prescribe and place a unit that you have never seen nor operated. Yet the demand is so great for products that manufacturers' representatives often do not have the newest items even

when you can get one to call on you to demonstrate his company's products. Most dealers still charge you, the clinician, to obtain equipment on trial, and for workshops in which you learn how to program their units.

So how do you learn what a device can do and how it can be accessed by your client? I have no good news for you except to say - beg! You can get a demonstration of new office computer equipment with a simple phone call request. Not so with augmentative communication products. I have made countless phone calls to dealer representatives and to manufacturers, repeatedly written requests, told them "sad stories", made promises to market their products, and pleaded, to get even brief hands-on experience with equipment.

I ask all of you to urge the dealer representatives here, and particularly those not here, to provide videotape presentations on their product lines. These tapes should show how it can be used, how you can program it and segments showing actual client use. Whether the tapes are professionally made or of the "home movie" type, they can greatly assist you in evaluating size, portability, switch use, practicality of mounting, and display formats and options. In the absence of hands-on experience, videotape is the best remaining option.

With the current availability of VCRs, videotape permits you to inform your client, the family and third party reimburser about an augmentative communication device and how it will benefit the client. I often think of an ALS client who died feeling very bitter and angry because he could not communicate with his family. The problem was that I was never able to convince the client's wife that he could use a computer in spite of his physical disability. She was not familiar with computers, so what I was describing was incomprehensible to her. What a difference a product demonstration videotape would have made in that man's life!

Of the devices that I have worked with, my favorite for the semi-mobile client who can move from bed to wheelchair, is the Words+Equalizer with the Keyboard Emulator, or WSKE software, coupled with appropriate switch access. This system is also ideal for the totally bedridden individual who has capability for only minimal physical movement. The Equalizer software was originally designed specifically for the ALS patient.

Laptop Toshiba or Datavue Spark screens with backlighting, are relatively easy to see. With the Words+Scanning Keyboard Emulator (WSKE) Software, a split screen displays Beukelman's list of the most commonly used words in the order of frequency of use, or the alphabet which allows one to pull up dictionaries that hold a total of 2750 words. It also has word prediction so that the most frequently used words are maintained in memory and infrequently used words are deleted. Automatic word endings assist in changing or adding tense and plurality. With the split screen, the client can easily see his text as he composes a sentence, and still access Instant Speech features while involved in the original composition.

With the SmoothTalker synthesizer and a printer, this system provides an efficient method of communication. This unit will run most DOS-compatible software, has games appropriate for teen-adult use, plays several songs, has a calculator and has basic drawing capability. It will drive some environmental

controls. This system is the one used by Dr. Stephen Hawking, the British physicist and mathematician, to record, deliver and print his lectures.

A client recently evaluated at our Center waited mute for three months for the approval processing and delivery of his unit . When it arrived, he stayed up most of the night programming it with his own vocabulary. He entered over 2000 of the 2750 words capacity within the first 24 hours!

For the client who can still use a standard computer keyboard, I have recommended the Adaptive Communications Systems RealVoice unit with either male or female SmoothTalker voice synthesizer. The RealVoice unit has a small tape printer and LCD display. It also has Instant Speech and uses LOLEC (Logical Letter Coding) to store words, phrases or whole paragraphs. RealVoice can be programmed with theme levels much like the Prentke Romich TouchTalker.

. RealVoice has 26 levels for storage of up to five letter codes. Each code can retrieve sentences of up to 250 characters in length. This unit can be accessed by an Expanded Membrane Board, single or dual switches, a joystick, Morse code or light pointer. However, for these various access methods it requires the upgrade to ScanPAC, which includes the Unicorn Board. With the Alternative Input (switch and Unicorn Board), four different levels can be stored under each light space. A number of environmental controls can be controlled by programming specific function keys and Touch Tone dialing can be done with the RealVoice and the ScanPAC. The disadvantage with RealVoice is the lack of a convenient handle. The case for the scanning unit is a small briefcase which must be in the 90-degree open position for operation of the unit.

Audiobionics makes a small hand-held unit that has voice output and can deliver a message by coupling with a telephone receiver. It has a limited memory and spells most entries aloud. This is often disconcerting to the listener. The keyboard is so compact that it is most easily accessed by using a pencil eraser to select keys. It does not have a printer. This unit is best used as a supplemental device.

The Canon Communicator is similar to the Audiobionics unit in that it is lightweight, has small keyboard keys and no switch access. It does not provide voice output, but does print on a ticker tape display.

The ACS Audscan II is software used with DOS-compatible computers. A "tree" or outline can be programmed which is read by the Votrax synthesizer in step fashion until the client selects the item desired. A problem we encountered with Audscan II is that once a selection is made, it is not repeated. Selection simply stops the recitation of the tree outline. If the listener has not been concentrating as the items are scanned, he may not realize that the last item read was the item chosen. However, this system is useful for the visually impaired client.

If the client has an IBM or IBM-compatible computer and can use a conventional keyboard, the E Z Talker software with a voice synthesizer can give a simple, quick output. E Z Talker has Word Prediction, Abbreviation Expansion, Word Endings, single finger operation of the Shift, Control and Alt keys. It also has many possible Instant Speech features. This system and the

more advanced E Z Keys are excellent systems for the minimally physically impaired person.

This brief summary of augmentative communication devices was intended as an introduction to available systems for assisting the cognitive, nonverbal adult. Other products that you may want to investigate are the Zygo line, the Eyetyper and Vois products. Although I cannot speak from experience on these products, they appear to have excellent potential for alternative/augmentative communication.

ASSESSMENT

Successful application of augmentative communication devices to specific cases is highly dependent on initial assessment of the client's present and probable future needs, and knowing the capabilities and limitations of available devices. I have developed assessment techniques through research, reading and experience, which includes some painful mistakes.

Experience has taught me that it is important to anticipate future consequences. It is important to know the client's prognosis. A device that may be ideal during the initial stage of a neurological problem, may within a short time after its acquisition become useless to the client due to progression of the disease and concommitant inability to operate the device. This would be terribly frustrating to the client, the family, the reimbursement source, and very disappointing and even humiliating to you, the clinician who prescribed the device. There would also be the lost training on the device, perhaps not recoverable because of disease progression. Before placing an order for an augmentative device, the clinician must know what possible consequences to expect and how to prepare for them as well as possible.

For example, an ALS client, who on initial examination is only having difficulty with speech and swallowing, may within a few months lose the finger dexterity required to use an augmentative device's keyboard. However, if this progression of the disease and its effects have been properly anticipated in the initial assessment, the clinician will have recommended a device that is adaptable to other means of input such as adaptive switches, scanning, or an expanded keyboard. The device can thereby retain its utility during later stages of disease progression.

There is another important consideration when planning to acquire augmentative communication equipment: lead time. You will find that it takes weeks and sometimes months to get reimbursement approval for, and delivery of equipment. These delays can be especially critical for clients with progressive diseases who require periodic changes to their units. Although no one wants to purchase unnecessary equipment such as peripherals and other ancillary units, it is advisable to request approval and financial coverage for anticipated needs from the client's insuror or other reimbursement source at the time of the initial equipment order. Those of you who have prescribed and ordered augmentative devices have likely encountered the inevitable delays in processing the necessary paperwork, supplying justification to insurance boards who are usually unfamiliar with augmentative communication, then getting approval of funds only to encounter delays of several months because of back orders on equipment. During all this, your client is waiting, possibly

declining physically, and anxious to communicate. So, in your planning, include lead time to cover these inevitable delays.

You must think ahead about a device's accessibility and handling by the client. Can the client physically support the device, if portable? If it is a portable device such as the RealVoice, Audiobionics or Touch Talker, will it later become too heavy for the client to carry and control? If it is not portable, where and how is it to be mounted? If the client is wheelchair-bound, there are numerous mounts that can be devised from simple PVC pipe assemblies to commercial goosenecks. But carefully consider the mounting, accessibility and operation of the device so as not to conflict with safe operation of the wheelchair. It may be difficult to get the proper arrangement of the augmentative device and still have space for the wheelchair controls, especially if the large membrane switch is used for wheelchair control. An independent mount for the device may be required, but it must not interfere with tray-mounted controls.

Some other requirements must also be considered. Can the client easily reach the unit at all times? Can it be seen easily by the user, and if necessary by the listener? Should it be angled on an easel-type mount? Can the user see over or around the device to safely operate the wheelchair? If the device has a printer, how does the device connect to it and where is it mounted? Additionally, provisions must be made for the client to use the device in places other than in the chair, such as in bed, on the floor or in other seating.

How much will the device and its mounting interfere with the client's physical care needs? Mounting and placement of a communication device were critical factors for one client who was confined to bed with constant ventilator status. It was important that the nursing staff be able to quickly move the entire system out of the way for patient care. It was also important that the communication device be placed within a very specific range for the client to be able to see it. Adjustment of the system became too complex for three shifts of constantly changing nursing personnel to operate properly, so it had to be modified.

However, in another case, one of our ALS clients, fitted with a battery-operated device with an adjustable monitor, backlighted display, and a snap-release mount, was able to transition from his bed, to wheelchair, to his van, and even to Walmart!

You and your support people will need to be creative and imaginative in providing for your client's easy use of the equipment. Sometimes the answer can be very simple. One client using the RealVoice device found it very useful in communicating with her active three-year old, but having it with her when she needed to say, "Don't go out that door!", was a problem. Although the RealVoice is relatively lightweight and portable, there is no handle on the unit itself. The protective carrying case has a handle, but it must be closed for transport and reopened for the device to be used. Instructions provided with the unit caution that dissembly of the unit or breaking of the unit's seal, both of which would be required to affix a handle, may void the warranty. At our request, a local glass company solved the problem. They devised and made a carrier of heat-bent plexiglass with a handle. This carrier allowed easy access for operation while satisfying the conditions of the warranty. The glass company was happy to donate the time and materials for this project.

You can see that in placing augmentative communication devices you not only must be able to determine the client's particular communication needs, you must also be able to satisfy those needs in a practical manner. The latter requires that you be able to do some practical engineering and mechanical design. You must also be prepared for the unexpected.

How many of you have encountered adults who were able to speak well and function in their daily environment, but could not read functionally, write or spell? This occurs in the general population, and most certainly in the nonverbal population. We were confronted in the hospital setting with a middle-aged man who had undergone a radical laryngectomy. He was rendered mute by the surgery and was functionally illiterate with no means for expressive communication except gesture. He was unable to use a conventional contact electrolarynx because of neck sensitivity. Fortunately, in this case a Cooper-Rand electrolarynx restored communication. But if there had been tongue involvement, the Touch Talker or the Words+Talking Screen would have been required and appropriate because both use picture symbols instead of alphanumeric keyboards.

If the client can read, how well can he see? For many adults, visual acuity may have been a problem before reaching nonverbal status. Or the visual difficulty may be secondary to the insult, as with a cerebrovascular accident or a gunshot wound to the head or spine. An ophthalmalogical evaluation prior to ordering augmentative communication equipment may avert considerable problems later. I have achieved excellent results in using the Words+Equalizer software with small laptop computers and monitors such as the Toshiba and Spark. But under certain conditions the screen is difficult to read unless it is adjusted precisely to minimize effects of glare. You may want to consider, in certain situations, the more expensive backlighted display for easier viewing.

So far, I have addressed these four basics of assessment:

- Preparing for future consequences
- Positioning and placement of the device
- Determining degree of literacy
- Ascertaining visual acuity

There are two additional potential problems. In a sense they go hand-in-hand in that one is listener attitude and the other is consumer attitude. We tried one device with a man whose wife totally rejected the robotic voice of the unit's synthesizer. She had a slight auditory discrimination and acuity problem. The synthesized speech was frustrating to her and therefore provided ineffective communication with her. Since she was the client's primary listener, this device, while operable by the client, did not enhance his communication within his environment.

Similarly, we tried the lightweight, hand-held Audiobionics unit with a cancer patient who had incurred a total glossectomy. Because of its small size, this unit has limited stored memory. It can "say" a limited vocabulary of words, but it primarily "spells" aloud. His wife commented that she "just couldn't follow it when it starts spelling at me."

We, as speech-language pathologists, often feel that any device which enables the client to communicate is an asset. However, clients and their families do not always agree. Even augmentative devices based on the most sophisticated technology will be ineffective if the client and/or primary listeners do not like them.

"Try, then buy" is the best way to avoid user and listener dissatisfaction. Whenever possible, obtain a device on trial before placing an order to buy it. After placement of one expensive unit with a totally paralyzed client, I found that rather than providing it to the client, the caretakers continued to "read his eyes" for yes/no responses, the mode that they had established prior to delivery of the unit. The caretakers simply didn't accept the device. This experience, for me, underlined the value of renting equipment before purchase.

Cognitive adults will tell you a great deal about what they want and do not want. Listen to them. They are the consumers. If they express strong preferences for one type of device when you feel that another would be more suitable, try to convince them of that suitability. But, be prepared to adapt the one of their preference if you are not fully successful. If the device is to be effective, the user must like it and personal preference is a major factor in achieving that satisfaction.

In one case, I believed that the Touch Talker would be best for a nonverbal engineer that I evaluated. It would give him portability and theme programming. It would be functional at home, while traveling and at the office. While he understood these advantages, he found the use of the picture symbols employed by the unit to be "childlike" and inappropriate for his workplace environment. Instead, he chose, and used enthusiastically, a stationary system similar to a computer he had used previously in his work.

I have attempted to give you a quick overview of my views and experience in the area of augmentative communication for adults with acquired nonverbal status. I hope that the rather limited information that I have presented will encourage you to investigate products available for serving the nonverbal adult, to ascertain their potential benefits to your clients and to learn more about this rapidly growing field.

TOPIC SETTING: GENERIC AND SPECIFIC STRATEGIES

Dr. Caroline Ramsey Musselwhite, 1989
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The ability to initiate a topic is a crucial skill in terms of communication competence. For the augmentated communicator, this discourse skill is particularly important, as topic initiation promotes power and conversational control.

Research on interaction between augmented and natural speakers has shown that topic setting is difficult for many augmented communicators. For example, augmented communicators often have a respondant role, with few initiations compared to their speaking partners (Culp, 1982; Harris, 1982; Light, Collier, and Parnes, 1985a). Furthermore, turntaking patterns are unequal, with the natural speaker taking the majority of turns (Farrier, Yorkston, Marriner, and Beukelman, 1985; Light, et al., 1985a).

A variety of factors have been suggested as contributors to the difficulty shown by augmentated communicators in initiating and maintaining topics. Culp (1988) delineated the following factors: vocabulary constraints, rate and timing of message delivery, physical effort required, limited environmental experiences, and partner behaviors (e.g., failure to pause).

This miniseminar addresses topic setting using both generic and specific approaches. Generic topic-setting refers to initiating topics that speakers have in common, such as: preferences in music, T.V., or movies; general information concerning personal topics such as pets or collections; and newsworthy topics such as sports teams or politics. Specific topic-setting refers to initiating topics reflecting events in the user's life, permitting partners to learn details about those events.

Light (1988) has identified four agenda or social purposes that are

fulfilled within communicative interactions: 1) Expression of needs/wants; 2) Information transfer; 3) Social closeness; 4) Social etiquette. Successful topic setting is crucial to these agenda, particularly for users with limited symbols.

A generic topic setting approach can support the information transfer and social closeness agendas. For example, the generic topic setter "I love rock music. How about you?" can contribute to the following social purposes identified by Kraat (1985, p. 21): 1) Help the user acquire a feeling of belonging (see -- I like the same music you do); 2) Reflect aspects of the user's personality (these are my interests); 3) Create/change the perceptions of others regarding the augmentated communicator as a person (observe -- this person is not a square!).

Specific topic setting approaches are particularly well-suited to achieving the information transfer agenda, with partners learning of important events such as a haircut, a new baby brother, or a trip to McDonald's with grandparents. In the process of this information transfer, it is highly likely that social closeness will also be increased.

Both generic and specific topic setting strategies are designed to encourage topic maintenance and turntaking, by use of pre-prepared follow-up questions. Partner training is also addressed through use of instruction blocks (e.g., information on appropriate types of questions to ask) and buddy training (demonstration by a partner who has been trained).

Attachments present how-to strategies for the following: 1) Collections (used as topic-setters for young or cognitively low-functioning persons); 2) Specific topic-setter books; 3) Generic topic-setter cards. These strategies can be used by both children and adults, and can be modified for use with electronic communication devices.

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COLLECTIONS: NORMATIVE PLAY MATERIALS
Dr. Caroline Ramsey Musselwhite, 1989

RATIONALE: Collections can be appropriate at any age, and offer a way to "normalize" unusual interests. Collections can also serve a variety of functions for persons with severe handicaps.

FUNCTIONS OF COLLECTIONS:

A topic of conversation
Something to look for on field trips or vacations
A joint activity (e.g., with peers, clubs, volunteers)
A gift idea

SAMPLE ITEMS:

matchbox cars jewelry key chains puppets post cards message buttons patches baseball caps transforming toys stuffed animals squirt guns sunglasses baseball cards stamps comic books

STORING COLLECTIONS:

Pegs on wall (e.g., hats) or pegboard (e.g., necklaces)
Tackle box (e.g., key chains, jewelry, matchbox cars)
Wall displays -- cover cardboard with contact paper and affix items with:
- Elastic (e.g., squirtguns, sunglasses, small animals)
- Velcro (e.g., hankies, bandanas)
- Hooks (e.g., necklaces, bracelets, key chains)

CHOOSING ITEMS:

Various displays can be used to select the item of the day; for example, the Choice Board by Developmental Equipment can be used to present three objects and/or pictures

DISPLAY OF ITEMS:

Affixed to waist, by spiral key chain (e.g., whistles, transforming toys)
Worn on body (e.g., hair ornament, message button, bandana)
Affixed to chair (e.g., sunglasses velcroed to chair) or laptray (e.g., Pony attached with elastic)

MAXIMIZING USE OF COLLECTIONS:

Use a wall reminder chart to prompt appropriate use of collections
Include information such as: Name; collection; storage (e.g., wall display); display (e.g., laptray/elastic); choice method (e.g., choice board - 3 items - reaching); and use (e.g., choosing, turntaking, eye-gaze to comments, visual tracking)

SPECIFIC TOPIC-SETTER BOOKS FOR USERS WITH LIMITED SYMBOLS
Musselwhite, 1989 (Adapted from NCACA Activity Book)

In his excellent 1985 NCACA presentation, David Beukelman suggested deveoping topic-setter books that can be used to help augmented communicators share messages across boundaries. We have used this concept with many individuals having differing communication needs and a wide range of cognitive levels. This description covers the basic approach, plus adaptations made to encourage turntaking with multiple turns, and to increase the potential for success.

GENERAL DESCRIPTION: A mini photo album can be used to insert topic setters, plus information about each topic.

INSTRUCTION BLOCK: To allow this system to be self-contained, specific instructions should be inserted in the first page of the album. Example (child with core of signs, ability to answer yes/no and "wh-" questions):

> Hi, I'm Katie. I have some neat things to show you. Ask me the questions on the post-it notes, or other questions I can answer by ... signing, answering yes-no questions, answering "wh-" questions.

SET-UP: Topics can be suggested by a variety of materials, including: 1) Momentos From Outings (napkin from Wendy's, church bulletin, "dead" balloon from circus); 2) Tidbits That Suggest Events (swatch of hair from haircut, tag from new shoes) can be put into the book to tell about special activities; 3) Instant Photographs (especially useful for exciting events such as first trial with Light Talker or Special Olympics); 4) Simple Pictures (Mazola jar picture from magazing, mini trampoline from catalog); 5) Line Drawings (hand on computer, specific pair of funny glasses); 6) Conventional symbols (Picsyms, Picture Communication Symbols). Questions should be writen on Post-Its, with answers on back. Examples are presented on the following page. The user's communication displays should also have references to the Topic-Setter book (TAKE A PICTURE OF THIS FOR MY TOPIC BOOK; LOOK IN MY TOPIC BOOK).

TRAINING IN USE OF SPECIFIC TOPIC SETTERS: Observation indicates that topic setter notebooks are used more frequently if a sequenced partner training approach is used. In this approach: 1) The individual who places the topic-setter does so in cooperation with the user (e.g., "How about this question: 'Who spilled their drink?'"; 2) The topic placer should next role play both topic initiation and question answering. With young children, a puppet or third party may be necessary. ("When Sandy comes over, point to 'LOOK IN MY TOPIC-SETTER BOOK'. Now pretend I'm Sandy: 'Who spilled the drink? You? ..... Boppy?...); 3) The topic placer now brings in the third person and facilitates the interaction only as needed; 4) That third person is asked to facilitate an interaction with another person ("Sandy, when the bus driver comes in, I think Katie wants to show this to her"). Through this sequenced approach, the user becomes comfortable with the topic-setting process across a variety of partners, with the aid of facilitators.

Sample Specific Topic Setters

Momento/Picture	Questions	Answers
	1) Guess who spilled the Mazola?	1) Me
	2) Guess what the baby did?	2) Crawled in it
	3) Know what mom did? both of us!	3) Yelled at
Ticket stub from the circus	1) Guess who took me to the circus? (Mommy, Aunt Carolyn, Nana & Boppy)	1) Nana & Boppy
	2) Guess who spilled their drink on the man in front	2) Boppy! Boy was he mad!
	3) What was my favorite act? (clowns, lions, tightrope walker)	3) Tightrope walker
	1) Guess what I'll be for Halloween? (Big Bird, witch, astronaut)	1) Astronaut
	2) Guess where I'm going? (trick or treating, Civic Center, party at church)	2) Civic Center
	3) Ask me if I get scared	3) NO WAY!

DEVICE ADAPTATIONS

Persons using electronic devices will likely want to adapt topic-setting to be accessed via the device. Some adaptations are obvious, such as choosing a consistent icon sequence to permit retrieval of new messages for persons using Minspeak based devices, including Touch Talker, Light Talker, and Intro Talker. For example, the PHONE icon may be used to precede a message, with message icons selected to represent various topics. A child using Interaction, Education, and Play software could use the I + CALL sequence, which represents "I have a secret". A preceding icon could be chosen to reflect the specific topic, such as: ZOO ANIMAL + I + SECRET = trip to zoo or circus; COOK + I + SECRET = Guess what we made in cooking class; TOYS + I + SECRET = We made puppets today. Below are suggestions for adapting topic setting to several low-cost devices:

MINI-TALKING CARD READER (Crestwood Co.): Prerecord message on card with symbol or word cue affixed. Ex: I played Rockets on the computer. Guess who won?.

WOLF (Adamlab): Designate a user page (e.g., page # 30) to be used for new messages. Set up the page with 1 x 1 dimensions, and name the page with a topic-opening statement (GUESS WHAT; I HAVE SOME NEWS). New messages can be stored on the page. When the user or partner power up to that page, the device will speak the topic opening statement. Any location that the user touches will speak the message.

PARROT (Zygo Industries): Have a same-age/same sex peer record a message in square # 1, with follow-up questions stored in subsequent squares.

GENERIC TOPIC SETTER CARDS FOR USERS WITH LIMITED SYMBOLS

Musselwhite, 1989

The idea for generic topic setters comes from a SEAAC presentation by Arlent Kraat. She expressed concern that persons with limited symbol base needed access to highly interactive symbols (e.g., TAKE ME), rather than merely standard request-for-needs symbols (EAT/DRINK/TOILET). Subsequent brainstorming and application yielded a strategy for developing topic setting symbols that can be used for the following functions:

INITIATE CONVERSATION: For persons with limited symbols, the opportunity to converse is typically quite limited;

SELECT TOPIC: With a limited number of symbols, the ability to select a topic is also limited, with topic selection typically made by partners, and frequently centering around weather and clothing;

PROMOTE MULTIPLE TURNS: The opportunity to engage in multiple turns is rare for persons with few symbols; thus, topic-setters must be designed with that goal in mind;

ENHANCE PARTNER TRAINING: Potential communication partners are often uncomfortable because of lack of familiarity with augmented communicators, and with the skills of specific users; this strategy can offer training regarding: 1) user's means of indicating; 2) user's yes/no; 3) appropriate types of questions to ask.

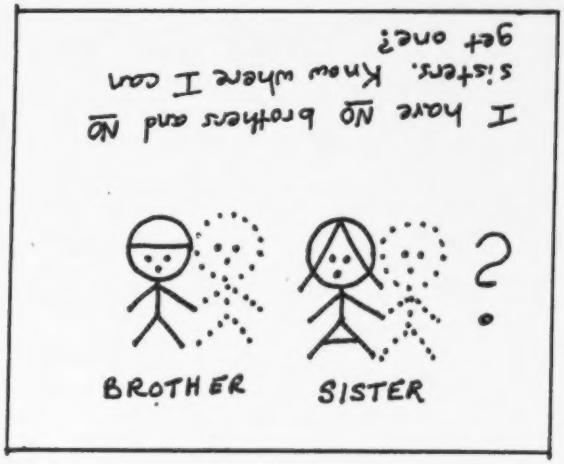
GENERAL DESCRIPTION: General topic setters typically consist of drawings/symbols on index cards, presenting a topic of interest to the user, but also likely to be familiar to partners.

INSTRUCTION BLOCK: An instruction block is essential, to achieve the partner training goals, and to ensure successful communication. This block should describe the user's means of indicating and yes/no, and should suggest appropriate questions to be asked. Example:

> Hi! I'm Matt. When I look at a picture, it means I want to talk with you. Please ask me questions that I can answer by looking at something or answering YES (by blinking my eyes) or NO (BY LOOKING AWAY). REMEMBER -- let me have a turn every time you have a turn!

SET-UP: Topic setters should meet these criteria: 1) High interest to user (favorite pet or collection); 2) Opportunity for at least two turns per partner before interaction is completed (e.g., use of follow-up questions or guessing); 3) Promote conversation by partner on topic specified by user. Topic-setters can be drawn on index cards and affixed to a laptray surface via plastic recipe sleeve protectors (available from Current Co). At least a dozen topic-setter cards should be prepared, with unused cards stored in a file box.

Sample Generic Topic Setters



Generic topic setters will typically include a topic setter card with the picture facing the user, and the message facing the partner, as shown in the two examples above. A questionnaire can assist in developing cards (see following page). Additional brief examples are:

GOLF: On weekends, I go golfing at the Country Club with my Dad. What do you do for fun?
GAME: Let's play a game! Please let me choose -- Hide and Seek; Locomotion Memory; Cootie.
PETS (fish symbol): I have two pets -- Sam and Amelia. Can you guess what they are? Do you have any pets?
T.V.: My favorite shows are Wheel of Fortune, Lassie, and Sesame Street. What do you watch?
POLITICS (picture of elephant/donkey): Well, what do you think about the election? I'm a (Bush/Jackson/Kennedy) man myself.
SPORTS (picture of favorite team's mascot): How 'bout them DAWGS!? Have you been to any games lately?
BOWLING: I'm a champion bowler. What's your sport?

DEVICE ADAPTATIONS: As with specific topic setters, persons using devices may want to use their devices to select. Again, some adaptations are straightforward, such as: 1) MINSPEAK-BASED DEVICES -- use a topic setter theme (e.g., 2 Symbol Theme = PHONE LIGHTNING); 2) LETTER-ENCODING DEVICES -- select a letter code for general topic setting, with various letters representing different topics; 3) WOLF -- Develop a "New Friends" page, with information on each topic stored under pictured location; 4) MINI-TALKING CARD READER: Have same age and sex peer record message, affixing symbol to card.

TRAINING ISSUES: Users should be permitted to select the desired topic setter, which is then affixed to the laptray. Practice should be offered in initiating and responding to conversation using the topic setter, such as role playing using a puppet.

Reducing Learned Dependency in Potential and Early Augmentative Communication Users

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Frequently children are referred for evaluation or are considered potential candidates for AAC appearing to have the necessary prerequisite cognitive and receptive language skills. However, when provided with an augmentative system (light or high tech) these children may persist in their lack of response/initiation. Behavioral and communicative analyses often reveal a history of learned helplessness. Even though the child is provided with a means for understandable communication, he/she may remain noncommunicative due to a strong pattern of dependency on others.

Seligman (1975) noted that the first consequence of learned helplessness is a decrease in motivation to initiate responses. Failure to initiate or poor initiation are often cited as problems in newly augmented communicators. Basil (1988) documented the presence of learned helplessness in children provided with picture board communication. An examination of client profiles for physically impaired children with no means of voice output, seen at the ACT Center within the past year revealed 85% to have some degree of learned helplessness in one or more environments. The frequency of this situation suggests that learned dependency may be a major factor in failure to communicate.

Physically and/or multiply impaired children appear to be at greater risk for learned helplessness. Nijssen and Schelvis (1987) note the relevance of inactivity, anxiety, and fear in association with helplessness. Physically/multiply impaired children are often confronted with these conditions. Perceived lack of control may also contribute to the problem. In their studies of normal human subjects, Breier, et al (1987) showed that "...lack of control over even a mildly aversive stimulus can produce alterations in mood as well as neuroendocrine and autonomic nervous system changes...". Providing the augmentative communicator with control experiences appears to be an important component in reducing learned dependency and

increasing interaction.

In order to overcome the debilitating affects of learned dependency, new/replacement behaviors need to be learned. These include both communicative and non-communicative behaviors and are to be used by both the child and his/her communication partners. Initially, professionals and care-givers should develop skills such that they are able to:

a. recognize the presence of learned dependency
b. differentiate learned dependency from other behaviors and conditions which may interfere with the development of interactions
c. apply specific intervention techniques for reduction/replacement of dependency behaviors in early augmentative communication
d. gently foster the change from "surrogate communicators" (Sweeney, 1988-89) to interactive partner with significant others in the child's environment.

Once learned dependency has been identified as a significant inhibitor of communicative growth situational factors and the degree of helplessness should be clarified so that the best intervention strategy(s) may be applied. Some of the strategies discussed by Sweeney (1986, 1989) include:

a. limiting "surrogate" communication
b. actively fostering self-help concept/independence
c. decreasing the rate of free rewards
d. assuring that the AAC system is a discriminative stimulus for independent communication
e. identifying, instructing, and using "communication coaches" as needed
f. supplying tasks/experiences which are novel, produce action, and demonstrate control
g. supplying vocabulary which allows for control, participation and reaction.

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USING COMMUNICATION TECHNOLOGY WITH THE SEVERELY/PROFOUNDLY COGNITIVELY HANDICAPPED: A CASE STUDY OF A TRAUMATIC BRAIN INJURED CHILD

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Are high tech communication aids useful with nonspeaking children who present severe and profound cognitive delays, compounded by additional handicapping conditions, including physical disabilities, loss of functional vision, and communication differences? This paper answers that question with a definite "Yes." D.L., age 4, suffered a head trauma at the age of 6 months, leaving him visually, cognitively, physically, and communicatively impaired. This paper outlines his communication progress over 18 months of intervention. This documentation will serve as clinical evidence to suggest that high tech aids be provided for all nonspeaking students, regardless of the extent of their handicapping conditions.

As the field of augmentative and alternative communication (AAC) continues to evolve and grow, new technology is being developed, old traditions are being re-examined, and new innovations are introduced. One "old tradition" under examination is the use of high tech communication aids with children who present severe/profound cognitive disabilities. While 92-100% of low functioning children will be nonspeaking (Matas, Mathy-Laikko, Beukelman & Legresley, 1985), these children have to scale a number of hurdles before they are considered good candidates for use of AAC technology (Romski & Sevcik, 1988). Chief among these hurdles is the development of cognitive and language prerequisites, such as development of cause-effect understanding, receptive language at the 12-18 month level, a language-cognitive gap, and picture identification. The problem with the use of these types of cognitive prerequisites is that there is little documentation for them in the literature (Kangas & Lloyd, 1988).

In the past, if technology was considered for low functioning children, the sophistication of the past generation of devices often made them too difficult or nonfriendly to the needs of low functioning children. As a result, limited monies for technology was often allotted for devices for higher functioning children. When money was available, the only technologies made available to

low functioning children were often limited in their features, cumbersome, or inflexible.

However, a new generation of technology is making communication aid use more accessible to the child with severe/profound cognitive delays. "Smarter" devices which have substantial memory for vocabulary, variable target sizes, present auditory output including singing, and can be structured to reduce sequencing or operation steps are opening doors for high tech use by low functioning children.

This paper will present a case study of a young child (D.L.) who is using a high tech communication aid as part of his total communication program. D.L. presents the profile of having language and communication problems secondary to overall cognitive, physical, sensory, and behavioral problems. He was referred to this clinician in April 1988 for a communication assessment and consideration for an electronic augmentative communication system.

History

D.L. received a closed head injury at the age of 6 months. A computerized tomographic brain scan (CT scan) showed hemorrhage in the left occipital region, while an electroencephologram showed right hemisphere swelling, most prominent in the right posterior temporal and occipital lobes. Later, follow-up CT scan examinations indicated marked cerebral atrophy. Basically, D.L. suffered diffuse brain damage involving both the left and right hemispheres.

D.L.'s injury resulted in a seizure disorder, continuous roving eye movements with nystagmus, suspected possibility of cortical blindness, increased muscle tone throughout with spasticity, and significant deficiency in all language and cognitive areas. He began receiving regular home-bound intervention (visual/cognitive stimulation, speech therapy, occupational therapy, and physical therapy) 6 months later.

Communication Skills Prior to Intervention

At the time of his referral to this clinician, D.L. had been receiving intensive therapies for 3 years. Physically , D.L. moved about his environment by rolling and maintained sitting postures for brief periods of time. A wheelchair and laptray were available, as well as a variety of other positioning equipment.

Visually, D.L. had scar tissue in the center of his left eye; preferred to use his right eye; continued to demonstrated nystagmus and roving eye movements;

demonstrated approximately 20/400 acuity; perceptually responded to light, movement, and people; tracked movement horizontally and vertically at 10-12 inches, and scanned the environment for people and objects.

From a cognitive/communication perspective, D.L. demonstrated (1) functional play with selected, trained objects, although his primary pattern of object use was to bang objects to his mouth or scratch/bang on the object; (2) ability to find hidden objects and retrieve them; (3) enjoyment of sound play and sound imitation games, with some use of specific sounds to indicate specific activities; and (4) intentional use of primitive communication signals, such as placing an adult's hand on a toy to indicate request for action or assistance.

Impressions of D.L.'s cognitive/communication gains since his injury were that he had re-established/retained many of the cognitive and language skills which would have been predominant as a 6 month old child and had gained additional skills, such as object permanence, early symbolic use of sounds, and intentional use of nonsymbolic communication signals. His strongest skills were in social interaction and play routines with familiar people. However, other skills were scattered and he had not generally progressed in overall cognitive/communication skills past the 18-24 month level.

Design of Communication Programming

D.L. was appearing to plateau in his development of cognitive and communication skills. To expand upon his current skills, his communication program would include continued development of vocalizations and gestures to signal basic needs and use of a electronic aid to promote expression of specific language and social interaction/bonding. Activities would continue to be provided to establish functional use of objects, means-ends and tool use understanding, and choice making routines.

In selecting a device, it was decided that it needed the following features: (1) auditory output with the capability of singing (2) enough memory to produce a variety of auditory output to maintain D.L.'s interest, (3) the flexibility to use a reduced number of spaces or choices, and (4) acceptance and ease in use for the family and facilitators. The device chosen was the Touch Talker with Minspeak™ software with the SmoothTalker speech synthesizer. Power In Play©, a Minspeak Application Program, was selected as the basis for D.L.'s personalized communication program.

D.L.'s initial assessment with the Touch Talker and Power In Play© was not what most diagnosticians would have considered positive. He consistently startled to the speech output; scratched, banged, or chewed on the device;

failed to stop activating the surface of the device to attend to the speech output; did not attend to the action of his hand on the device; or use the device in any form of interaction with the examiner.

Intervention Procedures and Results

Intervention began in May 1988 with therapy provided in D.L.'s home 2 times a week for a total of 120 minutes. Family members left the immediate area to remove any distractions. During the initial training, D.L. did not use the Touch Talker outside of therapy sessions or in school. D.L.'s therapy program with the Touch Talker to date could be divided into 3 phases: physical/sensory use of the device, guided interactive use, and emerging functional use.

Phase 1: D.L.'s first goal in using the Touch Talker was to train appropriate physical use and basic means-ends understanding of the device. D.L.'s hand was placed in one of the eight available targets and he was provided the direction "nice push." His occupational and physical therapists had indicated he had the motor ability to complete this task. A tactile symbol (e.g, raised drawing made of colored Puff Paint©) was provided. A tap on the target was usually given to direct his visual attention to the location of his hand. D.L.'s hand was removed and restrained after activating the target. If he chewed, banged, or scratch the device surface, the Touch Talker was turned off to prevent auditory reinforcement of that behavior. Over 4 months of intervention were provided (May -August, 1988) before D.L. would consistently push a target independently and listen/wait for the message before activating a second target. However, he did not consistently attend to the action of his hand on the device. During this training, the device was programmed with recreational songs and games which demanded physical interaction.

Phase 2: During the months of September through December 1988, D.L. began to show significant progress in his use of the Touch Talker, as well as gains in other areas of communication, such as the emergence of a yes/no response. Recreational activities continued to be used and D.L. selected songs independently, although his typical motor response was to select those targets directly forward of his right hand. Additional programming was used which required D.L. to be more discriminative in his selection of targets. A dressing activity was selected which required D.L. to match the object of clothing to the tactile symbol (a Puff Paint© outline) on his Touch Talker. In addition, games involving color coded photographs of his family were used. It appeared that D.L. was initially selecting targets by location as well as vision.

Phase 3: By July 1989, over 14 months after initiating intervention, D.L. was capable of playing with his Touch Talker in a semi-functional manner using 6

overlays to code 9 different communication routines. Having one picture code more than one song or message is the introduction of the true principles of the Minspeak™ software.

When positioned on the floor, D.L. would roll to his Touch Talker, press a favorite target, listen to the song, and press a second target. During interaction with a communication partner, D.L. would search his targets to find favorite songs (e.g., those which were paired with actions which his communication partner patterned with D.L.). After the song was over, he might even look to his partner and request more by saying "mo." Each song was represented with a colored line drawing. Each of the eight targets are color coded with the color code consistently across all overlays. At this point, D.L. was not required to complete any two-part sequencing, turn his device on/off, select symbol themes, or change overlays.

Future goals for D.L. in his use of the Touch Talker is to begin using it outside of recreational activities in the home. It is hoped that it can next be used for recreational activities in school and for communicating daily needs, such as requests for toys, foods, or specific activities.

Summary Of D.L. Progress

While use of the Touch Talker with Power In Play© was only part of D.L.'s overall therapeutic programming, it is felt that it has contributed significantly to his increase in cognitive/communication growth. Over the past several years of intervention, his goals have remained relatively consistent with scattered growth reported. However, in the months since the introduction of the Touch Talker, he has begun to demonstrate a yes/no response, direct specific messages to a greater variety of people, associate specific activities to specific tactile symbols and drawings/photographs, and produce more individual spoken words which carry true meaning.

Conclusion

Several important issues are illustrated by this case study:

1. High tech communication aids do not need to be eliminated as an option for children with severe and profound handicaps simply because they do not present skills often considered as prerequisite to use of a communication aid. Without use of the aid, there is no absolute guarantee that the skills needed to use the aid will develop independently or that the skills will generalize to use of the communication aid. Rather, the communication aid should be considered the means to teach the skills needed to use that aid.

2. Too often a child with a severe or profound handicapped is not considered "needy" enough be benefit from a high cost, high tech communication aid. Because "they don't have much to say", they are often provided electronic communication aids which lack the flexibility and memory of a high tech device, such as a Touch Talker. Being able to sing, make funny songs, have a variety of interactive games, and have the vocabulary changed quickly and easily should be the right of all nonspeaking children.

3. Communication needs of children with severe and profound handicaps go beyond "eat, drink, and toilet." We too often forget that children need to be children and have the capacity to learn more quickly when the activity is fun, socially reinforcing, and even at times a little naughty.

4. Decisions regarding the appropriateness of a device for a head injured child and those with severe and profound handicaps can not be made after a brief trial period. A period of diagnostic teaching, lasting several months, may need to be provided to determine the true potential for functional use of a device. While it may be too risky for some to purchase a device outright for a questionable child, loan systems or a rental approach may be an useful option.

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COMMUNICATION TECHNIQUES FOR THE QUADRIPLEGIC PATIENTS WITH HIGH SPINAL CORD INJURY

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The purpose of this session is to describe short and long-term communication considerations with several quadriplegic patients with high spinal cord injury (C1-C4) at the nation's largest hospital dedicated exclusively to the treatment of spinal cord injury and disease. Case studies of two children and two adults, followed from admission to discharge through this spinal cord facility are presented.

Information outlines medical history in each of the four cases. All four are primarily diagnosed as spinal cord injured; however, a secondary diagnosis of closed head injury is also noted in various degrees for each of the patients. The medical diagnoses, complicating medical factors, and philosophy of care is noted. In this type of facility, the pulmonary and nursing issues are a high priority, and directly relate to and are affected by communication skills of the patient. Various types of augmentative communication systems are used for interim communication needs as well as long-term communication needs.

The interdisciplinary team approach encompassing medicine, nursing, respiratory, nutrition, physical therapy, occupational therapy, social work, communication disorders, education, and recreation therapy provides rehabilitation for these patients in a three-phase system. Communication considerations evolve as the patients progress through these phases. In order to provide a consistent and appropriate treatment program for our patients at Shepherd Spinal Center, we divide each patient's stay into three phases. This program is designed to be flexible in meeting individual patient needs, to provide consistency, and to serve as a guideline for each patient's rehabilitation program. The length of time spent in each phase will vary according to the patient's requirements. As each new rehab patient is admitted to Shepherd Spinal Center, he/she will enter Phase I, which is a period of orientation and evaluation. During Phase II each discipline establishes a specific program of treatment. Various classes begin. In Phase III the patient is encouraged and assisted in making the transition to assume more responsibility for his/her programs and to work toward reaching his/her highest level of independence. The family is invited to the Center for update training session. Three of the four patients presented moved through all three phases.

One of the adult patients, a 35-year old mechanical engineer, who survived a motor vehicular accident with resultant spinal cord injury and closed head trauma, is the most successful of the four patients in his return to the community. In addition to the normal inpatient communication considerations, vocational plans and retraining issues are important because of this patient's potential for full time employment. Portable communication needs are recognized as well as table top computer access to transfer prior engineering knowledge through CAD software for job re-entry purposes. Third-party insurance funding is obtained for purchase of the complete package valued at approximately $12,000. This requires a synthesis of prior technical job specific knowledge and new procedures for communicating that knowledge.

The second adult is a brain stem injury from a motorcycle accident with total and permanent body paralysis including the ability to hold his head or obtain tongue movement, and is ventilator dependent. Using intact facial muscles, communication programming is done. The emphasis is to interface communication equipment and environmental control equipment to allow maximum independence in the home situation and in social situations.

One of the children presented in this study is a ten-year old male with a C-1 complete injury resulting from a 4-wheeler accident, with gastrostomy tube in place and ventilator dependent. Family wishes and considerations play a major role in this case.

The fourth case is a seven-year old male with a C-1/C-2 incomplete quadriplegia resulting from a pedestrian versus motor vehicular accident with a complicated medical history and management as a result. This child is ventilator dependent with significant spasticity, gastrostomy tube in place, and a shunt for hydrocephalus. There is no consideration of phrenic nerve pacers. The excellent support system for this patient directly affects the success of the augmentative and alternative communication system.

USE OF AUGMENTATIVE COMMUNICATION TECHNIQUES IN A PRESCHOOL LANGUAGE PROGRAM

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Introduction: Many authors have described the facilitative function of augmentative communication techniques for the development of spoken language (see Silverman, 1980, Table 2-2, for review of a number of studies). In the Preschool Language Program at Indiana University, we successfully used augmentative communication aids to increase the spoken language skills of children enrolled in our program. Augmentative communication techniques were used in individual therapy sessions and during group activities. The parents of the children were given basic instruction in augmentative/alternative communication and we assisted them in constructing communication boards for use at home.

Description of the Program: The Indiana University Speech and Hearing Center Preschool was established for preschool age children who exhibit significant problems in speech and language development. Classes, which are composed of eight children, meet twice a week for two and a half hours each session. Each session includes some short opening exercises, a choice of activities, snack time and one fifteen minute group language activity. During each preschool session, each child is seen for a half hour of individual therapy. These individual sessions take place away from the classroom and are designed to meet each child's specific speech and/or language needs. Parents are encouraged to observe both classroom and individual sessions. Frequent parent group discussions are held, so that speech and language goals and activities can be continued at home.

The staff of the Preschool includes a preschool teacher, a supervising speech/language pathologist and a psychologist. Four student clinicians participate in the program. Each clinician has primary responsibility for two children and works with these children in individual sessions. Student clinicians also assist in the classroom on a rotating basis.

Implementation in Group Activities: The composition of the Preschool group changes from year to year. During the 1988-89 academic year, the group was composed of seven children with limited spoken language skills and one child with a severe voice problem. We incorporated augmentative communication techniques into the individual therapy programs of the seven language disordered children and into classroom language activities. What follows is a description of the results of the use of the picture communication boards during group lessons, and a discussion of the case histories of four of the children.

Before we incorporated facilitative picture communication boards into the group activities, these activities were less than successful. All of the children had difficulty attending to the activities, even when the level of language used was very low and concrete. The number of

expressive responses from the children was also very limited, so that group interaction was minimal.

Because of the behaviors exhibited by the children during group lessons, we made the decision to use picture communication boards for additional receptive information and to give the children another option for expression other than spoken language. We incorporated picture communication boards into two activities during each session. The first of these was the opening activity or "circle time." A board was constructed with picture symbols to represent different songs or fingerplays that could be performed. Pictures were taken from Picture Communication Symbols (Mayer-Johnson Co.) or were hand-drawn. The boards were constructed with two-inch pictures inserted into plastic slide protectors.

We also used picture communication boards during the group language lessons. Each student clinician prepared a mini-communication board specifically for a particular language lesson. During the presentation of the language lesson, the student clinician pointed to appropriate symbols to provide receptive language information. The children could participate in the language lesson by pointing to the pictures on the communication board to respond to a question, request an item, or initiate communication. The children were not "required" to point to the pictures. Rather, we presented the pictures as an acceptable alternative means of responding.

After the picture communication boards were introduced during the group activites, we noted several changes in the children's behavior. In general, the children's attention to the presented task increased. Most noticeable, however, was the increased responses from the children. They actually vied with each other to have a turn to choose a song/fingerplay or to tell what should come next in an activity. Many times a child's point to a picture symbol was accompanied by an appropriate spoken word.

Parent Involvement: As part of our parent education component, we explained the concept of using augmentative communication techniques to facilitate the development of spoken language to the parents both individually and during group meetings. We held a special workshop in which we assisted the parents in making an activity specific communication board for use at home. Some parents also brought in lists of communication needs for their child. Student clinicians then constructed picture communication boards for use at home.

Implementation in Individual Therapy: We successfully implemented facilitative augmentative communication techniques during the individual therapy sessions. Case studies of four of the children enrolled in the Preschool Program illustrate this point. The children have a variety of communication problems, including oral dyspraxia, a severe articulation/expressive language problem, autism, and a receptive language learning disability. All the children have normal cognitive and physical abilities with normal hearing sensitivity.

Case 1. Helen, age 3, had been enrolled in the Preschool Language Program for one previous semester. Testing had indicated normal receptive language skills with a severe expressive language disorder. When Helen entered the program, she communicated primarily by pointing and gesturing. Helen produced five differentiated vowel sounds and the consonants /w/, /t/, and /d/ in limited contexts. She did not imitate any sounds or words. Initially Helen was taught to use manual signs. She quickly acquired a vocabulary of more than thirty signs.

When Helen re-entered the Preschool Language Program in the Fall semester, she communicated primarily with her signs and elaborated gestures. Helen did occasionally vocalize during communication and produced a few word approximations. After an oral motor/feeding assessment and a thorough diagnostic examination by a pediatrician, we diagnosed Helen as having oral dyspraxia. In individual therapy, Helen began to produce targetted words during structured activities. However, she would not attempt to use these words during conversational activities.

The clinician used activity specific communication boards with Helen facilitate her communication and to elicit spontaneous speech productions. During play activities, the clinician modelled pointing to the pictures on the board while saying the associated word. With the communication boards, Helen's attempts to communicate verbally, both imitatively and spontaneously, increased. She attempted productions of the targetted words approximately 80% of the time with the use of the boards and a clinician model.

Case 2. Jacob, age 3, entered the Preschool Language Program during the second semester. Prior to that he received individual speech and language therapy for six months at a local hospital. When Jacob entered our program, he imitated a large variety of words consisting of two or three phonemes with a direct "Say ____" cue. He did not spontaneously imitate adult utterances and used very little spontaneous speech. His primary strategies of expressive communication were gestures and intonational patterns. Receptive language was within normal limits. A phonological analysis of his spoken words indicated a severe problem characterized by substitutions for prevocalic phonemes and omission of postvocalic phonemes.

When spoken language was modelled during activities, with no picture cues, Jacob demonstrated appropriate play behavior, but did not vocalize. The clinician incorporated activity specific communication boards into the therapy activities to encourage Jacob to communicate spontaneously. During play, the clinician modelled language for Jacob both verbally and by pointing to pictures on the communication boards. The clinician responded to both a point by Jacob to one of the pictures or spoken words as appropriate communication.

By the end of the semester, Jacob consistently used the communication board to request objects or actions. He also spontaneously used spoken words to request objects or actions. Jacob imitated the clinician's spoken models during play activities. He spontaneously produced some two picture symbol combinations and approximated some two word

utterances. Jacob's imitations of the clinician's spoken models of one and two word utterances, without the communication boards, also increased.

Case 3. Michelle, age 4, had been enrolled in the Preschool Language Program during the previous year. Results of psychological testing indicated that Michelle was autistic with average intelligence.

When Michelle entered the Preschool Program, she would not participate in group activities or permit other children to enter her activities or space. She ignored and or resisted overtures toward her and frequently had tantrums when adults made attempts to direct her behavior. The vocalizations she used were usually incomprehensible, but at times Michelle repeated phrases from television commercials or social routines.

During that first year in the program, the clinicians used sign plus spoken language during Michelle's individual therapy sessions. They reported that Michelle frequently did not attend to the signs. By the end of the first year, Michelle used a point for requesting an object, signed/said "more" and "cracker" inconsistently, said "wa" (for water), "open the door," and "eat up." She also followed some simple directions.

While Michelle was attending a summer language program at another facility, the speech/language pathologist constructed a simple ten item picture communication board for Michelle. She reported that Michelle would look at the board, but would not use the board to request food at snacktime or for choosing a toy. However, Michelle would spontaneously touch an item to its picture.

When Michelle re-entered the Preschool Language Program for the Fall semester, we decided to continue to use picture communication boards with Michelle, but in a slightly different manner than was tried previously. The clinician used activity specific communication boards for different play activities. During these activities, the clinician pointed to appropriate pictures on the boards while modelling targetted words. When the clinician modelled use of the board, Michelle attended to the pictures. Initially, she was not asked to use the pictures expressively. Towards the end of the semester, Michelle was required to point to the pictures to request desired objects. Michelle's initial response was to tantrum. However, she always held onto the picture communication board. By the last week of therapy, Michelle requested eight different objects by pointing to a picture on the board during a play activity. Her mother also reported that Michelle had begun to request objects through the use of picture communication boards which had been made by the clinician for use at home. Michelle's spoken words increased slightly.

During the Spring semester, Michelle continued to use a point to pictures on the communication boards to request objects and a few actions such as "eat." She would occasionally produce a spontaneous point to and verbalization of a two symbol combination such as "more crackers." In the classroom, Michelle was a more active participant in

the circle time activity, occasionally indicating her choice of a song by pointing to the appropriate picture while verbalizing her request. Michelle's spoken words increased and were more situationally appropriate.

Case 4. Mark, age 4, attended individual speech and language therapy at our center for one and a half semesters prior to his enrollment in the Preschool Language Program. When initially assessed at age three years, nine months, Mark exhibited a short attention span and difficulty with following simple directions, even when given gestural cues. Expressive language was primarily echolalic or fixed forms with very limited use of novel utterances. From the results of the assessment, the examiners determined that Mark's strongest skills were in nonverbal and visual tasks. Use of simplified language with him did not increase his ability to successfully complete presented tasks.

At the initiation of individual therapy, we decided to incorporate picture cues into Mark's intervention program. We selected picture communication boards as an appropriate format to aid Mark's receptive language. Activity specific boards were used during interactive play with Mark. The expectation was not that Mark would use a point to the pictures to communicate. Rather, the clinician pointed to key pictures as she modelled simple one and two word utterances. The picture communication boards were used to aid Mark's receptive language.

After 18 hours of therapy, Mark gave objects on request with verbal and visual cues 80% of the time. He produced 145 novel utterances over two consecutive half-hour therapy sessions.

When Mark entered the Preschool Language Program, we continued to use this aided receptive language technique with him. By the end of the second semester, Mark's receptive language skills continued to increase to approximately a two and a half to three year developmental age level. For example, he responded to contrasted "Point to the ___" or "Pick up the ___" commands, with a verbal cue only, 90% of the time. Mark followed commands with "on" and "under," when cued with picture symbols, with 100% accuracy. Mark's expressive language skills were at approximately a three and a half to four year developmental age level (C.A. 5-0).

Conclusion: Our use of augmentative communication techniques was not revolutionary. However, we successfully used them with a population that has seen limited application of such techniques, namely the ambulatory, cognitively intact, child with problems of speech and language development. Since these children are viewed as having a good prognosis for the development of spoken language, they are often not considered appropriate candidates for augmentative communication. From our experience, however, augmentative communication can be a viable steppingstone to spoken language skills for these children.

Citation: Silverman, F. (1980). Communication for the speechless. Englewood Cliffs, NJ: Prentice Hall.